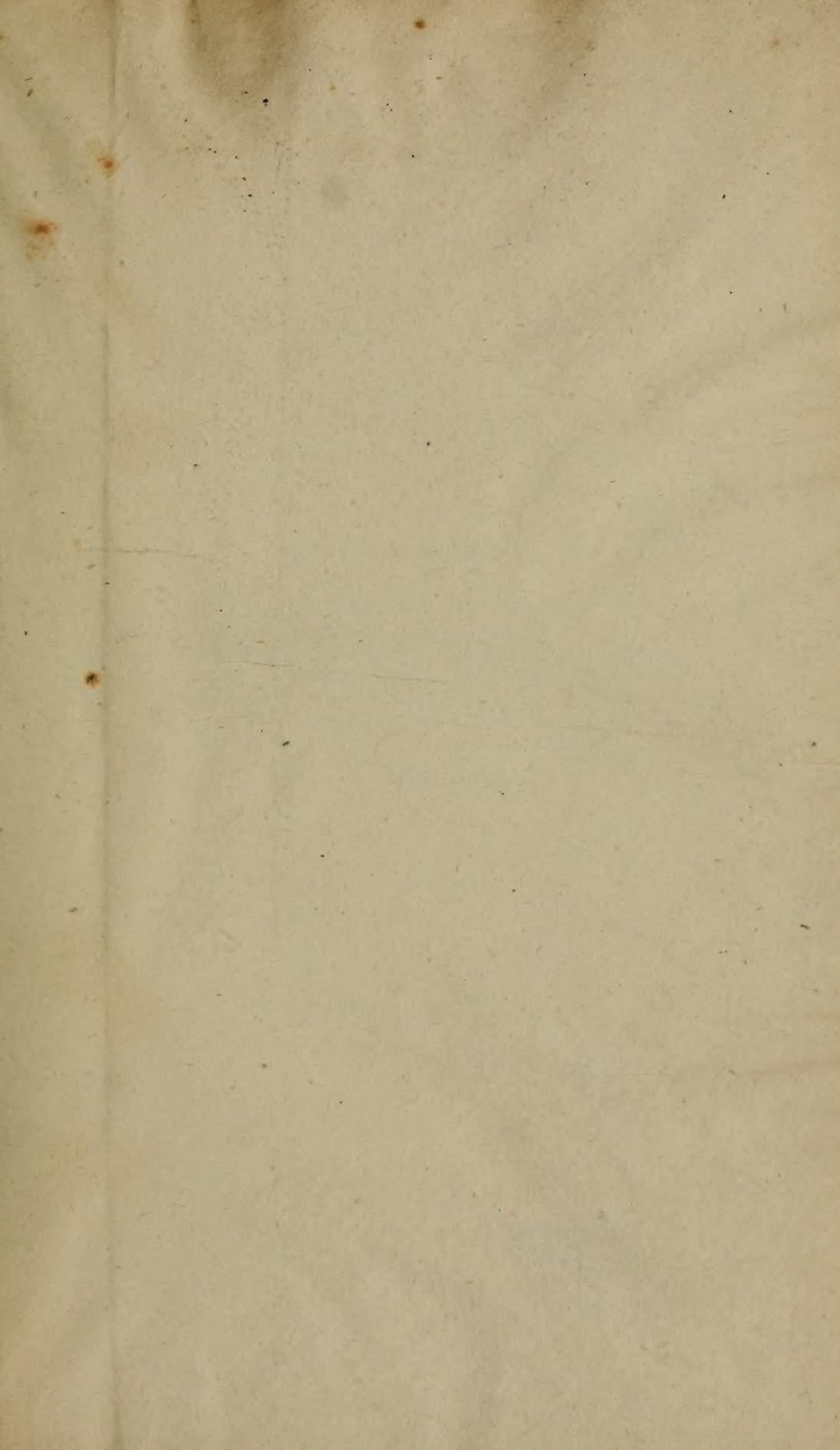


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Periodicals. — Philadelphia

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PHILADELPHIA

MEDICAL AND PHYSICAL

JOURNAL.

COLLECTED AND ARRANGED

BY BENJAMIN SMITH BARTON, M. D., *x ref.*

PROFESSOR OF MATERIA MEDICA, NATURAL HISTORY, AND BOTANY,

IN THE UNIVERSITY OF PENNSYLVANIA.

VOL. I.



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1805.

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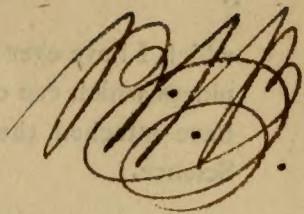
PRINTED BY T. & G. PALMER, 116, HIGH-STREET.

1804.

DISTRICT OF PENNSYLVANIA.

BE it remembered, that on the seventeenth day of November, in the twenty-ninth year of the Independence of the United States of America, John Conrad, of the said district, hath deposited in this office the title of a book, the right whereof he claims as proprietor, in the words following, *to wit*, "The Philadelphia Medical and Physical Journal. Part I. Vol. I. Collected and arranged by Benjamin Smith Barton, M. D. Professor of Materia Medica, Natural History, and Botany, in the University of Pennsylvania," in conformity to the Act of the Congress of the United States, entitled, "An act for the encouragement of learning, by securing the copies of Maps, Charts, and Books, to the Authors and Proprietors of such Copies, during the times therein mentioned," and also to the act, entitled, "An act supplementary to an act entitled an act for the encouragement of learning, by securing the copies of Maps, Charts, and Books, to the Authors and Proprietors of such copies, during the times therein mentioned, and extending the benefits thereof to the arts of designing, engraving, and etching, historical and other prints."

D. CALDWELL,
Clerk of the District Court of Pennsylvania.



TO SIR JOSEPH BANKS, BART.

ONE OF HIS MAJESTY'S MOST HONOURABLE PRIVY COUNCIL; PRESIDENT OF THE ROYAL SOCIETY OF LONDON; AND MEMBER OF MANY OTHER LEARNED SOCIETIES.

SIR,

THE following pages, although a considerable portion of them relates to a science which you do not cultivate (that of Medicine), are, with peculiar propriety, inscribed to you.

To you, Sir, the cultivators of Natural Science, in every part of Europe, have been proud to own their acknowledgements, as the most universal patron of whatever relates to natural history, and has a tendency to benefit mankind. I am anxious to show you, that in the United-States there are also cultivators of this noble science, and that they cannot but acknowledge how great have been your services and merits.

But my personal acquaintance with you, the advantages which I have derived from your correspondence, lead me, impel me, to beg your acceptance of the First Part of a work, which, I flatter myself, will ultimately tend to the extension of Medicine and Natural History, both in my own and in other countries.

To you, Sir, I am, certainly, indebted for a portion of what little reputation I may have in life; for a portion of that happiness

DEDICATION.

which I have ever enjoyed from the cultivation of Science : a happiness which can only be conceived by those, who, like yourself, have attached themselves to the amiable pursuits of Natural Science.

With the greatest respect,

I remain, Dear Sir,

Your very obedient and obliged Servant,

BENJAMIN SMITH BARTON.

Philadelphia, November 13th, 1804.

GENERAL PLAN
OF THE
PHILADELPHIA
MEDICAL AND PHYSICAL JOURNAL.

THE general plan of this work will be that of "The MEDICAL and PHYSICAL JOURNAL," "The MEDICAL ANNALS," "The ANNALS of BOTANY," and other similar works, that are published in Europe, and in the United-States. It is impossible, at present, to lay down a plan which will be uniformly pursued: or rather, it is not doubted, that considerable changes will occasionally be made in the aspect of the work. The following is the idea of the plan, which is now conceived by the Editor, and upon which he has already proceeded to some length :

I. The work will contain 1. ORIGINAL COMMUNICATIONS relative to all the branches of *Medicine*, *Natural History*, and *Physical Geography*. 2. BIOGRAPHICAL SKETCHES of the lives of eminent physicians and naturalists, especially those of the last half of the eighteenth century, and of the present time. 3. REVIEWS of, and EXTRACTS from, new publications in Medicine, Natural History, and Geography, especially those which have been published in the United-States, or which have a particular reference to this tract of country, &c. 4. MISCELLANEOUS FACTS, of various kinds, all, however, relating to the expressed objects of the work.

II. As the Editor believes that there will be no deficiency of Original Matter, so he trusts that such will constitute the bulk of every number, as it will, assuredly, the mass of the labours and collections of the entire year.

III. The Biographical Sketches, though it is believed that they will be chiefly original, are here mentioned distinct from the original communications.

IV. It is by no means the intention of the Editor to give a Review of every work relative to Medicine, or Natural History, that may be published in the United-States, or that may be published elsewhere, however respectable the works, or however nearly related they may be to this country. In some instances, copious reviews, or rather analyses, will be given: in some instances, he will content himself with announcing the titles of the works, and making short extracts from them; in other instances, he will merely notice the titles of the works. Some works, it is presumed, will not be worthy of any notice whatever.

V. A large part of the Miscellaneous Facts and Observations will be original. In many instances, these facts, &c. will necessarily be thrown together without much regard to order; but it is hoped, that it will often be in the power of the Editor, to so methodise and arrange them, as to present them to his readers in a tolerably well systematised manner.

VI. The PHILADELPHIA MEDICAL and PHYSICAL JOURNAL will be published regularly every six months. Each number will contain at least two hundred pages, printed on a good type and paper. The first number is now prepared for the press, and will be published early in the month of November next.

The annual subscription to The PHILADELPHIA MEDICAL and PHYSICAL JOURNAL will be two dollars, or one dollar each number, bound in blue boards.

In the conduct of this work, the Editor will have a constant eye to the pursuits of the Physician, the Naturalist, the Philosophical Geographer, and the Agriculturalist. It will be his uniform endeavour to bring together a mass of information, which may be useful not only to his countrymen, but to others, and honourable to himself. He makes no professions of candour and impartiality ; because these professions are too generally made, only to be forgotten, disregarded, or contemned.

Communications for this work (post paid, or by private conveyances) may be directed to the Editor, or to Messrs. John Conrad & Co., in Philadelphia ; to Messrs. M. & J. Conrad & Co., in Baltimore ; Rapin, Conrad, & Co., Washington City ; Somervell & Conrad, Petersburg ; or Bonsal, Conrad, & Co., Norfolk.

Philadelphia, July 8th, 1804.

ADVERTISEMENT.

THE First Part of *The Philadelphia Medical and Physical Journal* is, at length, presented to the public. The Editor submits it to its fate, with a hope, that it will not be received with more indifference than some of his other publications, of which the reception has been too favourable and flattering.

Accustomed, as he long has been, to an inspection of works, the plans of which are not essentially different from that of the Journal, the Editor is but too well persuaded of the many imperfections and deficiencies of the present publication. Of his own papers and "fragmentary rubbish," he thinks himself qualified to form a pretty correct judgment. They are not, perhaps, of much consequence: they are thrown together without much regard to order, and nothing like neatness or elegance of style has been consulted, in a single instance: but they may be useful. They contain facts (many of which are new) which, in the hands of others, may serve as the bases of regular essays, if not of durable systems: they sometimes "start a game," which, by better hunters than himself, may be pursued with advantage.

Of the papers, facts, &c., communicated to him by others, it becomes the Editor to speak with more hesitation. To say that he deems them valuable or important were to speak in highly favourable terms of the Journal: for the communications of others form a considerable part of the present volume. He ventures to flatter himself, however, that among the number of the original papers in the First Section, there are some which would not be deemed unworthy of a place in any similar production. The

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Biographical article is wholly new ; and a very large proportion of the Miscellaneous articles are now, for the first time, presented to the public.

The Second Part of the Journal will be published in the beginning of May next, if not much earlier. This will complete a volume of at least four hundred pages, and may be considered as the first annual gift of the Editor. A more regularly digested Preface will accompany this second part ; and this will serve as an Introduction to the whole volume.

Philadelphia, November 13th, 1804.

CONTENTS

OF

THE FIRST VOLUME

OF THE

PHILADELPHIA

MEDICAL AND PHYSICAL JOURNAL.

PART FIRST.

SECTION FIRST.

- I. NOTICES of the Epidemics of Pennsylvania and New-Jersey, in the years 1746, 1747, 1748, and 1749. Extracted from the papers of Mr. John Bartram.
- II. Notices of the Fevers of the city of Norfolk, in Virginia. In a letter from Dr. James Taylor, to the Editor.
- III. Some account of the Autumnal Bilious Fever of the Atlantic side of Virginia. In a letter to the Editor, from the late Dr. James Greenway, of Dinwiddie-County, Virginia.
- IV. Account of the most successful method of treating the Yellow-Fever, in the island of St. Thomas. In a letter from Dr. Frederic Detlef Meyer, lately of that island, to the Editor.

V. A Topographical and Medical Sketch of Bristol, in Pennsylvania. Communicated in a letter to the Editor, by Dr. Amos Gregg, jun., of Bristol.

VI. Supplement to the Preceding Paper. By the Editor.

VII. On the medical virtues of the Warm and Hot Springs, in the county of Bath, in Virginia. From the MS. journal of the Reverend Dr. A. Green, of Philadelphia. 1800.

VIII. On the medical virtues of the Humulus Lupulus, or Common Hop. Communicated to the Editor, by Anthony Fothergill, M. D.

IX. Observations on the Internal Use of the Rhus Radicans. In a letter from Colonel George Gibson, to Colonel Isaac Kagey. With Remarks, by the Editor.

X. Memorandum concerning the Use of Indigo in the disease of Cynanche Trachealis. By the Editor.

XI. On the use of Cod-fish, in the disease of Bronchocele, or Goitre. In a letter to the Editor, from Mr. James Geddes.

XII. Memorandum concerning the influence of Music on the Common Mouse. Communicated to the Editor, by Samuel Cramer, M. D., of Jefferson-County, in Virginia.

XIII. Description of the Falls of Niagara. Extracted from the Journal of a Gentleman, who visited them, a few years since. With an additional notice, by Mr. James W. Stevens.

XIV. Case of Tetanus, cured by Mercury. Communicated to the Editor, by the late John R. Young, M. D., of Hagerstown, in Maryland.

XV. Some particulars concerning the Locust of North-America. Written at Nazareth, in Pennsylvania, August 27th, 1795.

Communicated to the Editor, by the Reverend Mr. Charles Reichel, of Nazareth. With Remarks, by the Editor.

XVI. Additional Observations on the Cicada Septendecim. By the late Mr. John Bartram. From a MS. in the possession of the Editor. With a Note, by the Editor.

XVII. Memorandums concerning the Earthquakes of North-America. By the Editor. With a Supplement, by Mr. John Bartram.

XVIII. Observations on the Power of Habit in Vegetables. In a letter to the Editor, from William Barnwell, M. D. With Notes, by the Editor.

XIX. Notice of the Travels of a Mohawk-Indian. By the Editor.

XX. Some Account of the Disease called the Hollow-Horn. By the Editor.

XXI. On the Salivating Effects of Digitalis Purpurea, or Common Foxglove. In a letter from Dr. Mahlon Gregg, to Dr. Thomas Walmsley. Communicated by the latter to the Editor. With Additions, by the Editor.

XXII. Hints relative to the External Employment of the Leaves of the Liriodendron Tulipifera, or Tulip-tree, in cases of Gout and Rheumatism. By the Editor.

XXIII. On the Use of Plaster of Paris (different varieties of Gypsum, or Sulphate of lime) as a manure, in Virginia. In a letter to the Editor, from his brother, Mr. Richard P. Barton, of Frederick-County, Virginia.

XXIV. Facts relative to the Food of the Humming-Bird. By the Editor.

XXV. Anecdotes of an American Crow. By William Bartram.

XXVI. Extracts from a MS. Journal of the late Mr. James Boyd, of Lancaster, in Pennsylvania. With Notes by the Editor.

XXVII. On the Digestive Power of the Pike (*Esox*). In a letter to the Editor, from Mr. Andrew Ellicott, now of Lancaster, in Pennsylvania. With a Note, by the Editor.

XXVIII. Directions for the management of Silk-Worms. By the late Mrs. S. Wright, of Lancaster-county, in Pennsylvania.

XXIX. Meteorological Observations, made at Nazareth, in Pennsylvania, for the year 1793. By the Reverend Charles Gott-hold Reichel, of Nazareth.

XXX. On the medical virtues of the *Orobanche Virginiana*, or *Cancer-Root*, in Cancerous and other Ulcers. In a letter to the Editor, from Dr. George Bensel, of Germantown, Pennsylvania.

SECTION SECOND.

BIOGRAPHY.

Some Account of the late Mr. John Bartram, of Pennsylvania. By William Bartram. With notes, by the Editor.

OBITUARY.

Dr. George Pfeiffer.

Dr. Thomas Percival.

Dr. JOSEPH PRIESTLEY.

SECTION THIRD.

MISCELLANEOUS FACTS AND OBSERVATIONS.

SECTION FOURTH.

REVIEW.

Transactions of the American Philosophical Society, held at Philadelphia, for promoting useful knowledge. Vol. VI. Part I.

American Philosophical Society.

University of Pennsylvania.

PART SECOND.



SECTION FIRST.

- I. Some account of the different species and varieties of native American, or Indian Dogs. By the Editor.
- II. On a species of North-American Wandering Mouse. By the Editor.
- III. On the Use of Indigo, in the Strangles of Horses. In a letter to the Editor, from Mr. Thomas Turpin, A. M., Student of Medicine in the University of Pennsylvania.
- IV. Facts and Observations relative to the external employment of the Interior Bark of the Tilia Americana, or American Lime-tree, in cases of Burns and Scalds. In a letter to the Editor, from Thomas Walmsley, M. D., Physician at Chambersburg, in Pennsylvania.
- V. History of the Epidemic Fever, as it prevailed in Frederick-Town and County (in Maryland), in the summer and autumn of 1804. Communicated to the Editor, by Dr. John Baltzell, of Frederick-Town.

- VI. On the Poisonous quality of a species of West-Indian Fish. Communicated to the Editor, by Dr. Frederick Detlef Meyer. With Remarks, by the Editor.
- VII. On the Salivating and other effects of the Digitalis Purpurea, in a case of Dropsy. Communicated, in a letter, to the Editor, from Dr. Enoch Wilson, of Hights-Town, in New-Jersey.
- VIII. Hints relative to the Medical Properties of the Hypericum Perforatum, or common St. John's-Wort. Communicated in a letter to the Editor, from his Brother, William Barton, Esq., of Lancaster, in Pennsylvania. With Remarks, by the Editor.
- IX. Additional Observations on the Falls of Niagara, and particularly on their (supposed) original position. In a letter to the Editor, from Mr. Felix Robertson (of the State of Tennessee), Student of Medicine in the University of Pennsylvania.
- X. Medical Facts and Observations, on several subjects. Extracted from a letter from Dr. Lemuel Kollock, of Georgia, to Dr. William Currie, of Philadelphia. Communicated to the Editor, by Dr. Currie.
- XI. Extract of a letter from Dr. Currie to the Editor, giving some account of the deleterious effects of the Spigelia Marilandica, or Carolina Pink-Root, in two cases.
- XII. Notice of the Epidemic Fever, which prevailed in York-Town, and the adjacent country, in the autumn of 1804. In a letter from Dr. John Spangler, to Dr. Currie. Communicated to the Editor, by Dr. Currie.
- XIII. On the Use of Issues, in the Cure and Prevention of Diseases. In a letter to the Editor, from Mr. James W. Stevens.
- XIV. Observations and Conjectures relative to the *supposed* Welch-Indians, in the western parts of North-America. Re-

published from the "Kentucky Palladium." With additional Remarks and Conjectures, by the Editor.

XV. Experiments on the *Gymnotus Electricus*, or Electrical Eel, made at Philadelphia, about the year 1770, by the late Mr. Rittenhouse, Mr. E. Kinnersly, and some other gentlemen. Communicated to the Editor of this Journal, by Mr. Rittenhouse.

XVI. On the Use of the *Prinos verticillatus*, or Black-Alder, in Intermittent-Fevers, and other diseases. In a letter to the Editor, from Dr. Amos Gregg, jun., of Bristol, in Pennsylvania.

XVII. Description of an American Species of *Certhia*, or Creeper. Illustrated by a Plate. Communicated to the Editor, by Mr. William Bartram. With Remarks, by the Editor.

XVIII. Facts relative to the torpid state of the North-American Alligator. By the Editor.

XIX. On the Powers of Steam, in communicating heat to bodies, with which it comes in contact. By Robert M'Causland, M. D., and by him communicated to the Editor, in 1787.

XX. Observations relative to the Wheat-Moth of Pennsylvania, and other parts of the United-States. In a letter to the Editor, from Mr. William Mason Walmsley, of Byberry, in Pennsylvania. With Observations on various Species of Insects, by the Editor.

XXI. Conjectures relative to the Scite of Bristol, in Pennsylvania. Communicated to the Editor, by Mr. William Bartram. With a Note, by the Editor.

XXII. Meteorological Observations, made at Gnadenhutten, on the River Muskingum, at the distance of about one hundred miles west of Pittsburg (in Pennsylvania): begun May 20th, 1800. Communicated to the Editor, by Mr. John Heckewelder, formerly of Bethlehem, in Pennsylvania.

XXIII. Description of the Obstetrical Forceps of Johan Daniel Herholdt, M. D., Professor of Surgery in the University of Copenhagen, in Denmark. Drawn up, and communicated to the Editor, by Frederick Detlef Meyer, M. D.

XXIV. Notices of the Sulphur, Sweet, and other Mineral Springs, in the western parts of Virginia. From the MS. Journal of the Reverend Dr. Ashbel Green, of Philadelphia. 1800.

XXV. Continuation of the Experiments on the *Gymnotus Electricus*.

XXVI. Indian Account of a remarkably strong and ferocious Beast, which (they say) existed in the northern parts of the State of New-York, about two hundred years ago. Collected, and communicated to the Editor, by Mr. John Heckewelder. With Remarks, by the Editor.

XXVII. Notice of the Sulphur-Springs, in the County of Ontario, and State of New-York. In a letter to the President of the United-States, from the Editor.

SECTION SECOND.

BIOGRAPHY.



SECTION THIRD.

REVIEW.

I. Cautions to Young Persons, concerning Health, by Benjamin Waterhouse, M. D.

II. Modern Geography. By John Pinkerton. The article America corrected, and considerably enlarged, by Dr. Barton.

THE
PHILADELPHIA
MEDICAL AND PHYSICAL JOURNAL.

SECTION FIRST.

THE
PHILADELPHIA
MEDICAL AND PHYSICAL JOURNAL.

I. *Notices of the Epidemics of Pennsylvania and New-Jersey, in the years 1746, 1747, 1748, and 1749.*

THE following facts relative to the prevalence of certain very severe Epidemics in our country, many years since, are extracted from the manuscript letters of Mr. John Bartram (the Father), which have been kindly put into the hands of the Editor, by the family of that distinguished American botanist. Although these facts are by no means so particular as could be wished, yet, in the paucity of authentic materials for a history of the epidemics of our country, they cannot prove unacceptable to physicians.

In a letter to Mr. Peter Collinson (of London), dated May 5th, 1748, Mr. Bartram says, "We have had the most dreadful mortality this last winter, through the Province (Pennsylvania), both town and country, that ever was known since the Christians settled it; and it still continues.

“ It is now very grievous in Jersey. It chiefly takes men in full strength, though women and children, in abundance, have died of it. Many families have been broken up, and in some the whole is turning to corruption. Some continue sick, twelve, some twenty-four hours; many three or four days, and some two weeks, before the fatal tragedy is completed.

“ These two last summers (the summers of 1746 and 1747) have been the most sickly that ever we knew; but not quite so mortal as this spring. Last two summers, the Yellow-fever, and what we call the Dumb-Ague and Dutch-Distemper (because the Dutch first brought it in, many years ago, since which it rages in one part or another of the country, yearly, and baffles all physicians) prevailed. These two last seem to be joined, and each prevails most according to the particular constitution. Either of them is able to finish the fatal stroke, or render the body so infirm as not to recover its former constitution for several months, and many never.

“ Last summer (1747) the measles afflicted abundance of children, and a looseness following carried many off, in town (Philadelphia). Others a cough wasted away.

“ This winter a kind of pleurisy is followed with certain death. But the Yellow-Fever, the Dumb-Ague, and the Pleurisy joined, are the chief actors in this tragical scene.”

In another letter (dated April, 1749) to Collinson, he writes as follows: "The sickness and mortality in our country are still very grievous: a kind of pleuritic fever mixed with the Yellow-Fever, or which some call the Hungarian Fever, *with black vomitings*. Men are chiefly afflicted, and few recover, either in town or country.

"Several natural causes are supposed to act in this tragedy; as heat and cold, moisture and dryness, sulphur and salt, and we know not what: for we have had all these temperaments of the elements, ever since I can remember. If I must ascribe it to any natural cause, it must be to" * * * *

In another letter to Collinson (the date of which is November 2d, 1746) he says, "The fall of this year is the most sickly that ever was known, since the Europeans settled here. Scarcely a family has escaped in the country."

II. *Notices of the Fevers of the city of Norfolk, in Virginia. In a letter from Dr. JAMES TAYLOR, to the EDITOR.*

I RECOLLECT that about the year 1772 or 1773, a Bilious fever raged here, with a remarkable putrid tendency, owing to a very hot and dry season, and a moderate winter. It carried off several inhabitants who did not make application in time, as the putrid stage took place soon after the attack. The

bile was remarkably acrid, and constantly produced an irritation of the stomach, with violent vomiting, pain in the back, a sudden prostration of strength, and a chilliness at the first attack.

Bleeding, emetics, or any severe evacuation generally proved fatal. The mode adopted was to empty the stomach with large draughts of warm water, or chamomile tea, and then administer an opiate; with aqua menthæ, or a saline mixture. As soon as the stomach would admit, a gentle aperient mixture of senna, and manna and cream of tartar was administered, which generally carried off large quantities of bile, and immediately the antiseptics were thrown in; for keeping up the evacuation added greatly to the debility of the patient, and this was a constant attendant. During the fever, a strong infusion of serpentaria with crocus, when cold, was given very freely, and as soon as a remission took place (for there was very seldom a perfect intermission), the bark, with wine and elixir of vitriol, was administered. Many stomachs rejected the bark, and then we had recourse to bark clysters with wine and laudanum, occasionally; avoiding all animal food, soups, &c. Indeed, I have known several recover, without taking any bark, by the use of the infusion of serpentaria and crocus, occasionally adding laudanum, which I find very effectual in irritable stomachs. In the latter stage, I have trusted to wine chiefly, and a free admission of air, and have given from one to two bottles of genuine madeira wine in the course of twelve hours, with great and good effect; and even after there was

every appearance to suspect putrefaction was about to commence.

This is a disease peculiar to this climate, and we have similar cases every summer. We find, that the natives when attacked will not bear the lancet, or violent evacuations. Those from Britain or northern climates have more symptoms of inflammation, and require powerful evacuations at the attack : *but they must not be carried too far.*

This is the mode of practice I have pursued for near thirty years, and I think with great success. It is to be remarked, that if one of our natives seized with pleurisy, or inflammatory fever, in the spring, be bled freely, he is certain of an intermittent in the autumn. Therefore, even in inflammatory diseases, we are sparing of the lancet.

If the above hints, thrown together in a hurry, may be of any service, it will afford pleasure to,

Sir,

Your most obedient servant,

JAMES TAYLOR.

Norfolk, 25th November,

1793.

III. *Some account of the Autumnal Bilious Fever of the Atlantic side of Virginia. In a letter to the EDITOR from the late Dr. JAMES GREENWAY, of Dinwiddie-County, Virginia.*

YOU ask if our Autumnal Fever is ever contagious. I answer, no, never contagious. The negroes are not so subject to it, or to common intermittents, as the white people. Nor do they have it so bad; nor do they require more than half the medicines that white people do, when these last are sick of it.

It arises from *effluvia* exhaling from mud: and from water at rest, though deep, such as mill-ponds, the same exhalations are produced. I took the infection myself, some time ago, from the exhalation of stagnant water, covered with a scum, and suffered all the usual symptoms of the Bilious Remittent common to this climate.

The autumnal fever attacked sooner, and with more violence, last fall, than it has done in the last 25 years past. It was more tediously continuing; required more medicines to cure it; the sick were more liable to relapse, and many of them still remain in a weak state. The winter has been too warm, and not sufficiently cold to brace them.

A yellowness of the skin, but always in the eyes, takes place in every one attacked with our fall-fever;

and I have, now and then, seen one very yellow. Some I have seen spurt up bile from the stomach, without any motion to vomit. But these were such as had lived in low places, for a long time; or had often exposed themselves to the inclemency of the weather.

In the autumnal fever all suffer more or less in the stomach. There is a continual nausea, and frequently a vomiting of yellow or green bile, particularly during the exacerbation of the fever. A bilious diarrhoea sometimes attends the fever towards its remission, and is generally salutary: but in sickly places, the bile is secreted in such quantity that it continually discharges through the intestines, until the patient becomes emaciated and dies.

A costiveness is still a more common symptom, occasioned by a spasmodic stricture in the intestines caused by the heat and acrimony of the bile passing through, and out of, the *ductus communis choledochus*, in a vitiated state.

A pain and heat about the region of the liver, and a heat and *burning* (as they themselves frequently express it) in the stomach, are very grievous and common complaints. A scarlet eruption, or *petechiae*, sometimes appears on the skin, like those caused by the stinging of nettles; and these came out regularly with the exacerbation of the fever, and totally vanished in every remission: and where the paroxysms are alternately worse, these spots only attend the worst

fit, and do not appear in the milder one. Patients suffering under this eruption are all costive, and have a vomiting.

A continual hiccup seizes on some : hot air and warm drinks increase it. An inflammation now and then falls upon the leg, with great pain and redness from the ankle to the knee; and the chilliness, fever, and all the symptoms become more moderate, and almost vanish.

The fever is a double tertian, the paroxysms alternately worse, and alternately corresponding in the periods of their return : to-day it comes on at noon, to-morrow at night. The fever never goes quite off, but becomes more moderate, until chilliness ushers in the next paroxysm. The worst paroxysm is ushered in by the greatest coldness, and this is followed by a fever proportionally exasperated in all its symptoms. The next paroxysm is milder, and all the symptoms, in degree, less violent. The greatest fit is, perhaps, attended with vomiting ; the lesser one, perhaps, has neither chilliness nor vomiting.

This was the appearance of our fever, last autumn ; but there is one symptom I had like to have forgot. The piles were, in a few patients, very troublesome and painful : the haemorrhoidal veins swelled, and distended with blood, brought on inflammation and excruciating pain in the rectum, with costiveness. The danger was great, because the rectum, closed up with the turgid vessels, would not admit of injections ;

and laxatives taken by the mouth, produced, in their operation, great pain, and an increase of the fever and inflammation. I was, therefore, obliged to imitate nature, in her operation on the *inflamed* leg, before-mentioned ; and this never failed of success.

Wine, bark, and opium, were the common weapons that this disease was attacked with ; and many died.

I am an old-fashioned follower of Sydenham, and proceeded on his plan and method of cure. The consequence of it was, that not a single patient of mine died, though I attended some that were very old, even of the age of sixty, and seventy ; and one near eighty, who all recovered, and are still alive.

Dinwiddie-County, Virginia,

March 3, 1794.

**IV. Account of the most successful method of treating
the Yellow-Fever, in the island of St. Thomas. In
a letter from Dr. FREDERIC DETLEF MEYER,
lately of that island, to the EDITOR.**

IN the treatment of the Yellow-Fever, I had tried all the remedies (so far as I know) that have been recommended by practitioners, and all that to me appeared reasonable to be done, according to the different medical systems. But every mode of practice that I adopted was attended with equal success : or, I should rather say, was followed with equal disap-

pointment. I lost one out of three, or two out of five, of all my patients.

In the year 1802, led by the observations concerning the happy effects of Olive-Oil, in preventing and curing the plague of the Levant, that had been made by Baldwin, in Alexandria (Egypt), and Fra Luigi, in Smyrna, I resolved to adopt the practice of these gentlemen. I thought myself authorized by analogy to do so; for the difference between the plague and yellow-fever is far from being so great, as has been imagined.

I began the method with hopes of success; but my success was greater than I expected it would have been. I, therefore, deem it a duty to submit this method of treating the yellow-fever to the attention and examination of medical practitioners.

When I was called to a patient *in the beginning of the disease*, I immediately ordered him to be rubbed all over the body with warm olive-oil. This was applied by means of a sponge. I repeated the rubbing every two hours, until the perspiration began to break out; which frequently took place half an hour after the first rubbing.

If the pain in the back was very severe, I prescribed

R. *Ess. Gran. Paradisi*,
with which the affected part was rubbed.

Of the following medicine I gave two table-spoonfuls every hour, until it began to operate :

R. *Ol. Ricini Amer.* $\frac{3}{4}$ iii.
Sal. Mirab. Glaub. $\frac{3}{4}$ i.
Aq. Commun. $\frac{3}{2}$ $\frac{1}{2}$.
M.

Four or five hours after, I generally found my patients in a sound sleep, and in a plentiful perspiration.

In order to prevent them from getting cold, when under the operation of the purging medicine, I ordered their nurses to furnish them with a bed-pan, and not to allow them to be uncovered.

When the perspiration was over, I found the patient without any fever; and, in general, the only symptom of disease that remained, was a vertigo.

I continued rubbing with the olive-oil, three or four times a-day; and the *mistura oleosa salina* was given as many times, in the same period.

When I found an inclination to vomit, I applied a plaster of opium to the stomach, and prescribed

R. *Mistur. Riveri.* $\frac{3}{4}$ viii.
Sp. Lavend. com. $\frac{3}{4}$ i.
M. Give a table-spoonful every hour,

The common drinks which I recommended, and which appeared to be the most palatable to the patients, were beer and water, good Seltzer water, and cocoanut water.

In general, the cure of the patient was accomplished in seven or eight days.

The cases in which the preceding method proved ineffectual were generally fatal. In a few instances, my patients were treated with mercury, given in large dozes, as ten, and even twenty, grains every hour. They were, at the same time, advised to wash their mouths frequently, with warm milk, or barley-water. The recovery of these patients was preceded by a salivation.

I have seen one patient recover after an almost universal bloody sweat (*sudor sanguinis*). He was treated by port-wine, and a strong decoction of the root of Bistort (*Polygonum Bistorta* of Linnaeus), which was also given in the form of injections.

I think I have observed the highest degree of malignancy in those patients, who have exhibited the greatest fears of the disease. And permit me to add, that the man who should discover the means of eradicating from the public mind the terrors inspired by the Yellow-Fever, would deserve as much of mankind as Dr. Jenner has done by his happy introduction of the Vaccine disease.

Philadelphia, Oct. 11, 1804.

V. *A Topographical and Medical Sketch of Bristol, in Pennsylvania. Communicated in a letter to the EDITOR, by Dr. AMOS GREGG, junr. of Bristol.*

THE Borough of Bristol, in Bucks-County, is situated on the River Delaware, twenty miles N. E. from Philadelphia. The village contains (1804) about one hundred houses, besides a church, Friends' and Methodists' meeting-houses, and a public building, which was formerly the county-goal. It is bounded on all sides by water, having the Delaware on the S. a stream of water, called Mill-creek, on the S. and W. which flows from a pond of water. From near the source of the pond, another creek arises, which by a circuitous rout empties into the Delaware, at a place called Adam's Hollow. This last is an artificial canal, which was dug to prevent the pond overflowing the land. Where it empties into the Delaware, it is a hundred yards wide.

The borough contains about four hundred and fifty acres. Considering its quantity, the soil is various. Opposite to the lower part of the town, to Mill-creek, and to near the public road to Otter's-Bridge, is an extensive morass, or " flat," over which the tide regularly ebbs and flows. This was formerly banked meadow: from this to the pond, it is chiefly low meadow. There is, however, on each side of the road, some arable land. Up the pond and to the Delaware, the land is gravelly and dry, except a small

group of meadows (about a hundred yards wide), and a few stagnant ponds.

In the borough, there are two Mineral Springs. Over one of them, a Bathing house was erected, many years since. This is distant from the principal part of the town, about half a mile, in a N. W. direction. It is in a low piece of ground or meadow, and within a few yards of the head of the pond, already mentioned.

The surface of the water is covered with a dark yellow or okre-coloured substance, though, in places, it has a chalybeate appearance. Much of it also falls to the bottom.

The other spring (which I will call No. 2.) is found at the west end of the village, in a meadow also, on the north side of the cause-way. It appears much like the former. The experiments, however, which are afterwards to be mentioned, show a difference.

The water of the first spring was analysed by Dr. Rush, in 1773. Dr. A. Gregg informs me, that the second, also, was analysed by Dr. John Abraham De Normandie, then of this place. I do not know that this analysis was ever published*.

* It was published in the first volume of the Transactions of the American Philosophical Society. EDITOR.

I have added a short analysis (if it deserves the name) of them both; but I had not leisure to extend the analysis further than to note the action of chemical re-agents. The first, according to Dr. Rush, contains only two grains of solid matter to a quart of water, one of which was iron: the other had all the properties of common salt.

EXPERIMENTS.

<i>Experiments.</i>	<i>Bath, No. I.</i>	<i>Spring, No. II.</i>
1. Tincture of galls.	Reddish black.	Reddish brown.
2. Prussiate of potash.	Fine blue.	Yellowish green.
3. Water of ammonia.	No turbidness: light yellow colour.	No change at first: then a yellowish sediment.
4. Sulphuric acid.	No change.	No change.
5. Muriatic acid.	No change.	No change.
6. Solution of arsenic.	No change.	No change.
7. Mild potash.	Dirty yellow: not turbid.	Ditto, but less so.
8. Solution of the acetate of lead.	Milky colour: turbid.	Ditto: no sediment.
9. Nitrate of mercury.	No change at first: then a cloud, but no sediment.	Ditto; less in degree.
10. Nitrate of silver.	No change at first: then a light brown.	Milky.
11. Muriate of mercury.	No change.	No change.
12. Solution of the sulphate of copper.	Ditto.	Ditto.
13. Solution of soap.	No coagulum, but a lather.	Milky colour, but no lather.
14. Ammoniate of copper.	No turbidness: a blue colour.	Ditto, lighter.
15. Muriate of barites.	Yellowish brown: no sediment.	No change.
16. Papers stained by litmus, brazil-wood, and turmeric.	No change.	Ditto.

The preceding experiments are submitted without any observations on them. It may not be uninteresting to observe, that in both of these springs I have seen small frogs (*Rana pipiens?*).

Of the medical properties of these springs, I know nothing from experience. Dr. Rush observes that they “are emetic, purgative, and diuretic, according “to the constitution of the patient, or the quantity taken into the stomach. They likewise (he says) quicken the pulse, and promote perspiration.” Experiments and Observations. Philadelphia: 1773. The Doctor concludes, that they are proper in hysteria, epilepsy, dyspepsia, &c. A number of cases of their efficacy are published in the American Philosophical Transactions, by Dr. De Normandie. I think too much has been attributed to them. I am too much of a sceptic to “acquiesce without good proofs in the truth of every tale concerning the powers of medicines;” especially when we know, that one quart of the water contains only one grain of iron, the substance on which its activity depends. I think it more rational to ascribe some of the advantages that are said to have been derived from drinking these waters, to the change of situation, and the exercise which the patients are obliged to use at the time.

Most of the water that is used in the borough, is obtained from pumps, and is called “hard water,” because it does not form a lather with soap. To the hands, many of them feel rough. On adding to them, the nitrate of silver or of mercury, a milky co-

lour is produced. On standing a short time, a precipitate takes place, having a yellow appearance.

Here I intend not to speculate. I shall, however, add a conjecture, and beg it may be regarded as such: That where the town now stands has been *made ground*, and within no great period of time. How, if at all, this was effected, I pretend not to say. The fact which suggested the idea is the following, and came within my own knowledge. At the depth of about twenty-five feet below the surface, the earth is found to be the same as that of the adjacent marsh, to wit, a black mud, both which must be nearly upon a level. At this depth, in several places, have been found large sticks, or rather logs, of wood, sound and uninjured by the waste of time, except perhaps one fourth of an inch on the surface. I am not satisfied what kind of wood it was. It was something like pine.

Diseases are, no doubt, influenced by soil and situation. To the neighbouring marshes, together with the fogs, which we have during several months in the fall, have been ascribed the intermitting and remitting fevers which are epidemic every season. I am informed, that thirty years since, the former of these diseases was much more prevalent than at present, and yielded to the bark and other tonics, with less evacuations. And yet, my preceptor, Dr. Gregg, is of opinion, that winter diseases were more acute, and bore the debilitating plan better than they do now. The disease was ascribed, at that time, to the break-

ing of the banks, and the overflowing of the meadows. Every species of filth was, it is likely, carried off by the ebb-tide, which before was constantly acted upon by the sun, from its confined situation.

Our epidemics are seldom rise before the middle of July, or the beginning of August. They are dysentery, intermitting and remitting bilious fevers. Several cases of the latter have terminated in death, attended with black vomiting and a yellow skin; and where there was no possibility of its being taken by contagion. In 1799 and 1800, the dysentery raged, with much violence. Only a few cases, however, ended fatally. It yielded, with much certainty, to evacuations on the first days, chiefly by the bowels; and afterwards to the use of bark and opium. In the seasons just mentioned, it was general throughout the country. Blood-letting was sometimes necessary. My friend Dr. Mahlon Gregg, of Attleborough, used the sulphat of soda as an evacuant, combined with carbonate of lime, gum-arabic, and opium, with much success. I used it myself, in preference to every cathartic, not excepting the oleum ricini.

The scarlatina anginosa was epidemic in the spring of 1802. It began in April, and terminated in May. Blood-letting was of disadvantage in this disease. To my knowledge, none who were not bled, died. This was not the case when the contrary treatment was pursued. Debility seemed the predominating symptom from the first attack. Gentle purges were used with advantage. In every case that came

under my preceptor's notice, it terminated favourably. Gentle purges, blisters, camphor, opium, &c., were the remedies he employed.

The winter diseases are pneumonia, rheumatism, different forms of cynanche, &c. Several cases of cynanche trachealis occurred this season (1804), so late as July. Dyseutery has been the predominating disease, during the present season. The first cases occurred in the first week of July. Many of the first patients had a diarrhoea for several days, before either pain or fever made their appearance. Some had neither of the last-mentioned symptoms. Occasionally, the disease was ushered in with vomiting; and it was not unusual for patients to be costive for several days, with pain before the lax appeared. The fever and pain were seldom so severe as I had seen them in former years. It was generally confined to children. Tenesmus was a troublesome symptom. The treatment differed little from that of 1799 and 1800. Kino and other astringents were, I think, used with more safety, as the disease occasionally ran again into diarrhoea. There have been a few cases of remitting fever. Adults were more generally affected.

VI. Supplement to the Preceding Paper.

AS supplementary, in part, to the preceding paper, I shall introduce, in this place, a notice of an epidemic disease, which prevailed in the neighbourhood of Bristol, many years ago.

Dr. John Abraham De Normandie informed me, in the year 1789, that he well recollects an epidemic disease which prevailed two different times at Bristol, viz. in the year 1749, and again in 1753.

In both of these years, the disease made its appearance in the month of November. It began with a pain in the side. In the beginning, the pulse was generally full; but it fell so greatly by a single bleeding, that my informant did not venture to repeat the operation, and a different mode of treatment was adopted.

Genuine carbuncles were often observed in this disease. But they were not remarked to have much connection with particular crises of the disease.

In the progress of the disease, a putrid diathesis (as it is improperly called) generally prevailed.

This disease was extremely local, in different parts of the country, at the same time. Thus it was very common at Bristol, and for about four miles round that town, but it was unknown at Burlington, on the opposite side of the Delaware. In other parts of Jersey, however, it was extremely common, particularly at Allen's Iron-works, where of 130 persons, 80 were seized with the disease; *all* of whom died. It was also very common at Salem, and at Gloucester.

In the treatment of this disease, Dr. De Normandie found nothing so beneficial as the Virginia Snake-

root (*Aristolochia Serpentaria* of Linnæus), exhibited in decoction. At first, he gave the medicine in such large quantities that it excited vomiting. But he depended more upon the diaphoretic operation of the medicine.

This disease, of which a more ample account is a *desideratum* in the medical history of the United-States, is noticed by many of the medical writers of Europe. It seems to be described by the learned Sauvages, under the following names, viz. *Peripneumonia putrida*, *Peripneumonia maligna*, *Peripneumonia typhodes*, *Pleuritis biliosa*, *Pleuritis erysipelatosa*, *Pleuritis putrida*, *Pleuritis pestilens*, &c. It is the *Pleuritis biliosa* of Bianchi.

THE EDITOR.

MS. Medical Journal, for the year 1789.

VII. *On the medical virtues of the Warm and Hot Springs, in the county of Bath, in Virginia. From the MS. journal of the Reverend Dr. A. GREEN, of Philadelphia. 1800.*

THESE Springs are chiefly useful in the cure of rheumatism and gout, and other local affections of the nervous system. They are also highly useful in a number of cutaneous eruptions, and are frequently beneficial to persons of a bilious temperament.

The cures they have performed in the gout and rheumatism are almost incredible. A gentleman, by

the name of ——, whom I saw here, and who is a man of science, and apparent candour, assured the company, that he had been for fourteen years incessantly afflicted with rheumatism and gout, and had but little expectation of ever obtaining relief. That the year before he made this communication, he was induced to try the Warm-Springs. He used them nearly two weeks without getting any sensible benefit, and for some time even with an aggravation of the symptoms. At the end of a fortnight, however, he was surprised with a cure almost instantaneous. All his pains left him at once, and they had never returned; nor had he experienced any inconvenience from his complaints, till the time he gave this narrative (in 1800). He had then come to the Springs, for a few days, to use them, as a preventative, but did not need them as a remedy for any sensible complaint.

An instance of cure, nearly as wonderful as this, I saw myself. A certain Mr. S——, a gentleman of respectability in Virginia, had long been tormented with the chronic rheumatism, the principal seat of which was in his loins. He used the waters at the same time with myself, and for nearly two weeks, he complained, that he rather grew worse than better. At length, however, his pains left him so suddenly, that he could scarcely believe they were gone; and, for a day or two, he was constantly putting himself in such attitudes as he thought would make him feel his former complaint, if any of it remained. It did not, however, return, and he went away well.

In using these waters, considerable care is necessary. They should not be drunken in large quantities at first; and in drinking them it is a precaution which should never be neglected, by those who have a weakness of the stomach or bowels, to cool them before they are used. This is easily done by filling a bottle with them at the spring, corking it closely, so that the gas cannot escape, and then placing it in cool water, till its temperature is such as not to relax the stomach.

From inattention or disregard to this caution, considerable inconvenience has been experienced by many. A few glasses may be taken warm in the course of a day, especially by those of a bilious habit, or those who are subject to costiveness: but, in general, it is of much consequence to cool the water, before it is taken into the stomach.

In using the water as a bath, great care must also be taken. At first, a person should not remain in the water more than a few minutes, and perhaps never beyond a quarter of an hour. By degrees, the time of remaining in may be increased, till, at length, it may be continued to forty minutes; and may be used twice a day by those who have a firmness of the muscular system, or who are affected with obstinate rheumatism, or gout. But as the use of this bath is one of the greatest luxuries in nature, there will always be a call for caution and self-denial, that it be not used to excess.

After coming out of the bath, there is danger of taking cold, and the benefit which might be received, is often prevented or retarded by this circumstance. Many seem to suppose, that the waters are to do every thing, and that the use of them is to supercede all other means and considerations. But this is so far from being the case, that there is even more danger of taking cold after using this bath, than after a warm bath of common water. To avoid cold, it is necessary to go from the bath immediately to a close room, and continue walking for a considerable time, or else to go to bed. When the bath is used in the evening, perhaps, it is always best to go directly to bed. But as a most profuse perspiration, and of considerable duration, is the certain consequence of this, it ought not to be done more than a few times by any except those who have a fixed rheumatism, or gout. They, indeed, should do it daily : but as it weakens the system very much, it is certainly to be avoided where circumstances do not render it indispensable. On the whole, one bathing in the morning, without going to bed after it, is sufficient in most cases. And in all cases to avoid a check of perspiration is to be the subject of constant attention. After coming from a warm room, exercise in the open air should be used for some time.

It is much to be regretted, that these Springs do not belong to some person of activity and enterprize. If they did, they would probably be the first watering-place in America, and perhaps in the world. But the property of them is in the hands of people who

seem equally regardless of their own interest, and of the convenience of the company who resort to them. Provisions are easily obtained, and of the best kind; and, indeed, they are usually purchased in sufficient abundance by the keeper of the springs. But they are badly dressed, and the hours of breakfast, dinner, and supper, are irregular and unseasonable. The greatest want of accommodations, however, is in the article of lodging. This is wretched, indeed, and often prevents the benefit which the waters might otherwise produce.

THE HOT-SPRINGS.

At the distance of about five miles, in a southern direction from the Warm-Springs, there are others, which greatly exceed the former in heat. This collection of waters, issuing from the ground, is certainly a very singular phenomenon. They rise, like those already mentioned, perpendicularly, from the earth, and are found in a valley between two ridges of mountains. There are four springs here which are used for bathing, and are of the following temperatures, viz.

No. 1 is 106 $\frac{1}{2}$	degrees of Fahrenheit's thermometer.
No. 2 is 103 $\frac{1}{2}$	—
No. 3 is 102	—
No. 4 is 96	—

These springs are all within 150 yards of each other. Beside these, there is one which they call the Sweet-Spring, from a fancied or real resemblance of the water to that which is usually known by this term. The temperature of this is $96\frac{1}{2}$ degrees of Fahrenheit. And in addition to all, there is a good spring of common water, of the temperature of 52 degrees. All these are within a few hundred yards of each other, and one of the hot springs is so near to the cold spring, that you may hold one hand in one, and the other in the other.

The hot springs are used in the same cases as the warm, especially where gout and rheumatism require a powerful sudorific to break their hold on the system. It is not easy to remain more than fifteen minutes, at a time, in the hottest spring of all; and even with this a degree of faintness is often felt. The patient, on coming out, is immediately wrapped in a blanket, and lies down in the bath-house, and sweats most profusely. After this, he frequently goes in again, and the same process is used. The other springs are used as circumstances or inclination dictate.

A cure is said to have been made by these waters, in some cases in which the Warm-Springs have failed. Yet there is, certainly, a body and richness in the Warm-Spring waters, which is not perceived in these. These are more like common water warmed or heated; though the bubbles of air, or gas, ascend in them, in considerable numbers.

The accommodations at the Hot-Springs are reckoned (in 1800) the best of any which are found at the various watering-places in this part of Virginia. The lodging, however, is only tolerable, and as the company is all entertained in one house, there is always a necessity of being in a crowd when out of a lodging-room ; and it is not possible, even in it, to avoid disturbance from the noise occasioned by the company.

VIII. *On the medical virtues of the Humulus Lupulus, or Common Hop. Communicated to the EDITOR, by ANTHONY FOTHERGILL, M. D.*

AT our late conversation respecting the medical virtues of the Common Hop, on which you did me the honour to request my opinion in writing, I shall very willingly lay before you the result of my experience. At this distance, however, from my notes (which, on relinquishing practice, I left in England), I can give you but a very imperfect account, and that merely from memory.

Several years ago, I was induced to give it a trial, from observing its effects in well-hopped ale, used as a common beverage, and afterwards to prescribe it as a remedy, in certain cases, in preference to other bitters.

Formerly, in some parts of Europe, it was prohibited as a noxious weed of deleterious quality, and

acting as a slow poison, and therefore fell into almost total disuse. So powerful is prejudice, that articles of much higher celebrity, as antimony, mercury, and even the Peruvian bark, had once nearly undergone the same fate. Happily for mankind, all these important articles revived in their turn, and, at length, triumphed over the gross ignorance and superstition of the times. Happily too for the great brewers, who annually vend many millions of gallons of malt liquor, that the hop, instead of being deemed a poison, is now universally held to be one of the most wholesome ingredients in the composition.

Convinced, my dear Sir, from observations almost innumerable, of what is daily passing before our eyes, and still more, if possible, from personal experience, that the common hop is not only one of the most pleasant and agreeable bitters yet known, but is also possessed of a real anodyne, soporific power, without the disagreeable effects of opium. It can be taken, for any length of time, with impunity, whereas the Portland-Powder and most other bitters, if long continued, very seldom fail of producing very serious and alarming consequences. Its daily habitual use, among all ranks of people, in sundry malt liquors, seems to have caused it to be considered rather as a dietetic than medicinal article, and to induce the London College to omit it entirely in their list of the *Materia Medica*. Writers, accordingly, have either touched on its properties very superficially, or passed it over, in profound silence. Without any documents or communications concerning it, I began to con-

ceive, some years ago, that it had been too much neglected, and therefore resolved to adopt it, as occasion might point out.

The cases in which I have found it to succeed best, have been such as demanded a light, agreeable bitter, combined with an anodyne quality : as

First : in various cases of dyspepsia, attended with pain and flatulency in the stomach and bowels ; entire loss of appetite, and restless nights.

Secondly : in catarrhs and asthmas, and other cases attended with a troublesome tickling cough, and great inquietude.

Thirdly : in painful cases of gravel and stone, or biliary concretions, or severe after-pains of child-bed women.

Lastly : in the above and other painful cases where an opiate was greatly wanted, but could not be exhibited, in any of the usual forms, without producing violent retching, severe head-ache, or other very untoward symptoms. Here a strong infusion of the hop, pursued freely, both internally and externally, has seldom failed to sooth the pains, and finally to procure a calm, tranquil sleep.

I have seldom used it in any other form than that of infusion, stronger or weaker according to the state of the stomach, and other circumstances : sometimes

combining other bitters, agreeable to the intention, as chamomile flowers, tansey, quassia, Peruvian bark, &c., sometimes cassia, nutmeg, cloves, or some of the aromatic seeds, as caraway, annis, coriander, cardomoms, &c.

Such are the observations that occur to me on the subject in question. Should they coincide with your own, I shall be glad.

From, Dear Sir, very sincerely,

Yours,

A. FOTHERGILL,

Philadelphia, Sept. 12th,

1804.

IX. Observations on the Internal Use of the Rhus Radicans. In a letter from Colonel GEORGE GIBSON, to Colonel ISAAC KAGEY.

MANY persons, inhabitants of this county (Allegheny county*), who were supposed to be in the last stage of a consumption, have been restored to perfect health, by taking the decoction of a vine, the receipt for preparing which I now send to you, assuring you, that the fact is too well established to admit of any doubt.

The many persons who have been cured of pulmonary complaints, some of them very bad, give me

* Pennsylvania.

hope, nay the strongest assurance, that you will derive the same advantage from using the medicine.

There are two vines of the same species, called "Poison-Vines." The one grows in meadows, and appears like a number of small vines from the same root, matting and creeping spirally around old stumps and trees, both dead and green. The other, which is the one you are to make use of, you will find growing in strong, rich uplands, where water sometimes stagnates. This vine usually rises at the root of a large oak, and ascends straight with the trunk of the tree, to which it connects itself by a number of small fibres, and adheres so closely that it is hardly perceptible, until you observe its leaf and branches, which generally shoot out at six, eight, or ten feet from the ground.

You are to cut this last vine into pieces of ten inches, or a foot, in length; take the bark carefully off; divide these pieces into as many slips as you can, throwing away the bark and pith. Put as many of these slips as a man can grasp between both hands, into a clean, iron pot, with one gallon of water, which is to be reduced, by boiling, to something better than a pint. Of this decoction, which you may sweeten to your palate, take three wine-glasses full every day, at three equal periods, beginning (fasting) in the morning.

REMARKS.

The first of the vines mentioned above is the *Rhus Toxicodendron*: the second (and that which is directed to be used) is the *Rhus Radicans*. A decoction of the vines of the *Rhus Radicans*, known by the names of *Poison-Vine*, *Cow-itch*, *Mercury*, &c., has lately been employed, in a case of pulmonary consumption, in the Pennsylvania Hospital. The particulars of this case will, in due time, be published in this *Journal*. At present, it seems proper to observe, that after the medicine had been employed, for some time, with evident advantage, the patient (a delicate female) fell a victim to the disease.

THE EDITOR.

X. *Memorandum concerning the Use of Indigo in the disease of Cynanche Trachealis.*

THE following preparation of Indigo is said to have been used, with much advantage, in the disease of *cynanche trachealis*, *croup*, or *hives*.

A portion of the common Carolina Indigo (the *fecula* so called) is put into a rag, and is stirred about in water, until the latter becomes strongly impregnated with the colouring matter. Of this water the doze for a child, two or three years old, is a tea-spoonful, every eight or ten minutes.

The medicine is said to produce no very sensible effect: or, rather, it is found to do good when no very sensible effect has been produced. Sometimes, it pukes; but this operation is not necessary to ensure the good effects of the medicine. On the contrary, it is thought to be less effectual in relieving the symptoms of the disease, when it has puked.

This mode of treating croup (the spasmodic form of the disease) is, so far as the Editor knows, entirely limited to Virginia, and especially to the county of Culpeper. The Editor will gladly receive any further information on the subject. In the meanwhile, he thinks it proper to observe, that he records the preceding information, as he will often be found to record real or supposed medical facts, with hesitation, and with doubts.

THE EDITOR.

XI. *On the use of Cod-fish, in the disease of Bronchoccele, or Goitre. In a letter to the EDITOR, from Mr. JAMES GEDDES.*

I MENTIONED, I think, that the people of Manlius* make use of Cod-fish, as a remedy for this complaint. These people become more and more confident of the efficacy of this remedy. But, notwithstanding

* One of the military townships in the State of New-York.
EDITOR.

standing the many proofs they adduce, I am still suspicious, that they are deceiving themselves.

I learn from them, that the attacks of the disease upon the *brute creation* are by no means equal to what they have been for some years past, although no Cod-fish has been used for *their* benefit. And I suspect, that the same cause that has operated in favour of the cattle, has relieved the people, and the Cod-fish has accidentally got the benefit of it.

In using this medicine, the Cod-fish is eaten by the patient; some of it is steeped in water, with which water the neck is washed, and some of the water they drink. Lastly, some of the fish is bound on the neck, over the part affected.

Onondaga, April 16th,
1801.

XII. *Memorandum concerning the influence of Music on the Common Mouse. Communicated to the EDITOR, by SAMUEL CRAMER, M. D. of Jefferson-County, in Virginia.*

THE following circumstance was related to me by a gentleman of undoubted veracity.

One evening, in the month of December, as a few officers on board of a British man of war, in the harbour of Portsmouth, were seated around the fire, one of them began to play a *plaintive* air on the violin.

He had scarcely performed ten minutes, when a mouse, apparently frantic, made its appearance, in the centre of the floor, near the large table which usually stands in the wardroom, the residence of the lieutenants in ships of the line. The strange gestures of the little animal strongly excited the attention of the officers, who, with one consent, resolved to suffer it to continue its singular actions unmolested. Its exertions now appeared to be greater, every moment. It shook its head, leaped about the table, and exhibited signs of the most extatic delight.

It was observed, that in proportion to the gradation of the tones to the soft point, the extacy of the animal appeared to be increased, and *vice versa*. After performing actions, which an animal so diminutive would, at first sight, seem incapable of, the little creature, to the astonishment of the delighted spectators, suddenly ceased to move; fell down, and expired, without evincing any symptoms of pain.

Facts somewhat similar to the preceding, but not (that I know) so circumstantial, are recorded by different authors. Linnæus notices the circumstance in two words. Speaking of the Common Mouse (*Mus Musculus*), he says “*delectatur Musica.*”—*Systema Naturæ*, &c. Tom. I. p. 83. No. 13. Gmelin, in his edition of the System, omits this part of the Linnæan history of the animal.

EDITOR.

XIII. Description of the Falls of Niagara. Extracted from the Journal of a Gentleman, who visited them, a few years since.

THE Falls are formed by a general descent of the country between Lake Erie and Lake Ontario, of about 300 feet, the slope of which is generally very steep, and in many places almost perpendicular. This general descent of the country is observable for about 100 miles to the E., and above 200 miles to the W., or rather N. W., of the Falls.

The slope is formed by horizontal strata of stone, great part of which is lime-stone. At Fort-Erie, which is 20 miles above the cataract, the current is sometimes so strong, that it is impossible to cross the river in the ferry-boat. Proceeding downwards, the rapidity of the stream increases. It may, however, generally be crossed by hard rowing in a boat, opposite to the mouth of Chippewa-Creek. As we rode along the St. Laurence (viz. from Fort-Erie, on the Canada side), we heard the sound of the Falls, at the distance of ten miles. The wind was N. E. and the air clear: had it been N. W., we should have heard it at a much greater distance. In heavy weather, and with a fair wind, the sound is sometimes heard 40 or 50 miles.

The Rapids, or First Falls, begin about half a mile above the great Cataract. In one instance has a man been saved, who had been carried down to them.

His canoe was overturned : he retained fast hold of it, and it very providentially fastened itself to the uppermost rock. Some people on shore, seeing this, ventured to his assistance, and saved his life, at the risk of their own.

As we approached the Falls the first time, the sun was low in the west, which gave us an opportunity of viewing the beautiful rainbow, which is occasioned by the refraction of his rays, on the cloud or fog, that is perpetually arising from them. We afterwards found, that the whole phenomenon is never viewed to so much advantage, from the Canada side, as in a clear evening. The vast fog, ascending from the grand cataract, being in constant agitation, appears like the steam of an immense boiling cauldron. In summer, it moistens the neighbouring meadows, and in winter, falling upon the trees, it congeals and produces a most beautiful crystalline appearance. The view of this fog at a distance, which, when the cause of it is known, is in itself a singular phenomenon, fills the mind with awful expectation, which, on a nearer approach, can never end in disappointment.

The first sight of the Falls arrests the senses in silent admiration. Their various hues, arising from the depth, the descent, and the agitation of the water, and the reflection of the sun-beams upon them ; their great height ; their position between lofty rocks, and their roaring noise, altogether render them an unparalleled display of nature's grandeur. But what chiefly distinguishes them, and gives them a majesty

incomparably superior to any thing of the kind, in the known world, is the vast body of water which they precipitate into an immense abyss.

The St. Laurence is one of the greatest rivers of America. It is very deep, and about 742 yards wide at the Falls. The perpendicular descent there is about 140 feet, down to the level of the water below. How far the water rushes downwards, still further within the chasin underneath, is uncertain. It falls 58 feet within the last half mile above the Falls, which adds to the force and velocity of the cataract. The sound occasioned by the great and precipitate fall of such a vast body of water has the most grand effect that can be conceived. It far exceeds in solemnity any other sound produced by the operations of nature. It is only at the Niagara-Falls that the force of that figure made use of in the book of *Revelations* can be fully felt: “I heard a voice as the voice of many waters.” And what did that voice say? It proclaimed aloud, as if all Heaven spoke, “Hallelujah: for the Lord God Omnipotent reigneth.” This is the language that has been thundered, for ages, from the Falls of Niagara.

Every hour of the day, and every change of the weather, varies the scenery of this romantic, this magnificent display of the wonders of nature, compared with which, every attempt of art to produce the sublime, sinks into utter insignificance. The first day that we spent there, the weather was clear. The next day, it became cloudy, and rained a little.

As we were desirous to enjoy the prospect before us from every possible point of view, we went down the high bank, below the cataract, into the immense chasm below, and from thence walked, or rather climbed, along the rocks so near the cataract till it appeared ready to overwhelm us.

The descent, though steep, is not dangerous. General Simcoe, the late governor of the province, caused a ladder to be fixed in the most perpendicular part of it, which is so safe, that his lady ventured to go down it. Below the air is, in some places, strongly tainted with the smell of dead fish, which lie in great numbers on the beach. Every creature that swims down the rapids, is instantly hurried to destruction. We had seen a loon a little above them, which was, unknowingly, approaching swiftly to its ruin. Even birds, which fly above them, are frequently impelled downwards by the strong current of the air, as their shattered fragments among the rocks do attest*.

When the river is low, it is easy to walk up to the foot of the Falls: but when high, one has to climb over rocks and piles of large loose stones, for near half a mile. This last was the case when we were there. In many places, the impending masses of stone seemed ready to fall upon us.

It is known that the Falls are divided into the Great and Lesser Falls, by means of a lofty Island

* Perhaps these were the fragments of water fowl, in which case the above remark is incorrect.

between them. At the place of descent, we were nearly opposite to the Lesser-Falls, the waters of which rush down in a direction nearly parallel with the beach we walked along. They are again divided into two very unequal falls, the least of which probably discharges more water than the great fall of the Rhine in Switzerland, which is the most famous water-fall in Europe.

We now approached the Great-Fall, which discharges at least four times as much water as the two lesser ones together. It is nearly in the form of a horse-shoe. We observed below, what is imperceptible above, that this fall has not throughout the same pitch. In the hollow of it, where the greatest body of water descends, the rocks seem to be considerably worn away. We cannot, however, subscribe to the opinion, that the cataract was formerly at the northern side of the slope, near the Landing; and that from the great length of time, the quantity of water, and the distance which it falls, the solid stone is worn away, for about nine miles up the river, towards Lake Erie.

This notion seems extravagant. The island which separates the Falls is a solid rock, and so high, that the river can never have run over it. Its bank towards the Falls runs in the same direction with them, and at the same time does not project beyond them, which would, surely, be the case, if the whole body of rocks, from which the water descends, was fast wearing away. The situation and appearance of the

Falls is exactly the same as described and delineated by the French artists, 160 years ago. Besides, according to the laws of motion, the principal pressure of the water here must be in the direction in which it moves, and consequently not against the rocks it merely flows over, and where it meets with no opposition. There is less probability of the bottom wearing away here than in any other river of equal depth, where there are no such falls : for where the current is so very strong, the pressure downwards must thereby be very considerably diminished. And, for the same reason, the water being ejected far beyond the precipice, acts with little force against its edge. How then can it wear or bear it away for miles, even in the greatest length of time ? If the solid stone at the Falls had been carried away at so monstrous a rate as is supposed by some, it might be expected that the Rapids would, in length of time, become smooth, or vary their appearance, which has not been observed to be the case.

That the perpendicular descent of such a vast body of water, has produced an immense chasm below, is more than probable ; and that where the greatest quantity of it falls, the surface of the rocks may, in great length of time, have become more hollow, is very credible. But it appears difficult for us to conceive, that, in any known period, an immense bed of rocks should have been so completely worn away, for nine miles, that no vestige should be left of them ; and the Falls exhibit, at length, their present appearance. An old Indian told us, that many years since

a grey-headed Chippewa had said to him, “ the white people believe, that the Falls were once down at the Landing. It is not true. They were always where they are now. So we have heard from our forefathers.” We are led, therefore, to conclude, that the Niagara-Falls received their present singular position at * * * * *

It is generally supposed, because the assertion has frequently appeared in print, that it is possible to go behind the descending column of water at the Falls, and to remain there, in perfect safety. Conversation, it has been said, may be held there, without interruption from the noise, which is less there than at a considerable distance. People who live near the spot have daily to contradict these fables. They have themselves been repeatedly as far as possible under the Falls, and are in the habit of conducting strangers there. Their information is, therefore, to be relied on.

Under the Table-Rock (as it is called), from a part of which the water descends, there is, it is true, space sufficient to contain a great number of people, in perfect safety. But how should they get there? Were they to attempt to enter the cavity, behind the Fall, the very current of the air (as the guides say), even were the stream of water not to touch them, would deprive them of life. The truth is, it is possible to go under, that is, below the Falls, as we did, but not to go behind them.

The motion of the water, below the cataract, is, as may be supposed, extremely wild and irregular: and it remains so down to the Landing. As far as the fog extends, it is impossible to judge of the state of the atmosphere with respect to heat and cold: in summer it cools it; and in winter renders it milder. The surrounding country, on the Canada side, is very delightful, affording charming stations for pleasure-grounds, from whence the Falls might be viewed to advantage. On this account, as well as for the sake of trade, the land here will probably, at some future period, sell for a very high price. It is at present (1798) valued at £10. an acre.

The banks around the Falls are lined with white pine (*Pinus strobus*), and cedar (*Thuya occidentalis*).

Additional notice concerning the Falls. Communicated to the EDITOR, in September, 1801.

I am situated 24 miles east of Niagara-Falls. I frequently hear them roar at this distance, and see the volumes of clouds they pour into the heavens. I lately spent an afternoon in contemplating them, in one of Mr. Painter's fields, about half a mile below the great pitch. This appears much the most eligible situation to contemplate their magnificence. Here I discovered, that viewing them with an inverted eye, gives them all the delicacy, and the luxuriant tints of the *camera obscura*. Lake Erie, all last spring and

summer, has been about two feet higher than common : but I do not perceive, that this excess of water causes any visible change in the appearance of the Falls. Many travellers of the first respectability, from the United-States, and Europe, have visited them this season.

MR. JAMES W. STEVENS.

XIV. *Case of Tetanus, cured by Mercury. Communicated to the EDITOR, by the late JOHN R. YOUNG, M.D.* of Hagerstown, in Maryland.*

I HAVE had a case of Tetanus, which to me has been extremely interesting, because concerning this disease I have heard such a variety of opinions, that I knew not which to credit, or what plan to pursue. It is, therefore, interesting to me, inasmuch as it confirms me completely in the treatment I shall hereafter rely on.

The case I allude to occurred, from a bruised finger, in a boy about twelve years of age. The injury was so great, that I thought it proper to take off the finger. The wound appeared to do well, for six or seven days, when he was seized with the usual symptoms of Tetanus. For the first day and night, I gave him large and frequently-repeated doses of opium, but by the next day, I was discouraged from conti-

* Some account of this truly ingenious and amiable young man will be given in a future number of this Journal. EDITOR.

nuing this medicine any longer, It appeared only to mitigate his symptoms, when under its powerful influence. It frequently brought on a sickness, and efforts to vomit, which were extremely distressing : it also induced a suppression of urine. These great inconveniences, and its giving but a temporary relief, determined me to discontinue its use.

Recourse was now had to mercury, with a determination to give it a fair trial. Calomel was given in as large and repeated doses, as his stomach and bowels would bear ; and mercurial ointment was rubbed in freely. Under this treatment, he was not the least amended for the first day ; but, on the contrary, appeared rather worse, With a view of obtaining a truce, the warm bath was recommended. In this I was happy to find a palliation as powerful as opium, with none of its ill consequences. He was never put into it without coming out greatly relaxed, and always relieved. The mercury was persevered in regularly.

On the third day after the mercury had been used, it had not affected him, and he was much worse. The exacerbations were frequently so violent, that it appeared very evident to me, that nothing but the bath prevented him from being carried off, in some of them. In this alarming situation, I resolved to try the corrosive sublimate, preferring this preparation to one that appeared inefficacious. I cannot say, that I was without hopes of success, being guided by the

theory I had embraced in my *Inaugural Dissertation**, concerning the associated actions, subsisting between the vessels of the mouth and those of the stomach. Sublimate, being a more powerful local stimulant, seemed indicated where a speedy action was wished. Whether this theory be true or not, I placed some confidence in it; for the habit of thinking on a particular opinion, often creates a belief.

The sublimate, in the form of solution, was exhibited in as large and repeated doses, as it was supposed he could bear, without inflaming his stomach. By continuing its use fourteen hours, it, at length, produced sickness at stomach, and began to heat his system. A small abatement of his symptoms now became evident. There gradually ensued, hot skin, fever, swelled face and jaws, and a proportionable diminution of his symptoms, until the salivation became complete, when his disease left him. His remedies were now laid aside.

Upon revisiting him, one day and a half afterwards, I was greatly disappointed to find, that his disease had returned, and that the effects of the mercury had subsided. The sublimate, mercurial friction, and warm bath, however, again relieved him, and were, once more, omitted. The disease, however, recurred a third time, just as above related. I entertained not the least doubt of being again able to relieve him,

* An Experimental Inquiry into the Principles of Nutrition, and the Digestive Process. Philadelphia : 1803.—EDITOR.

having witnessed, in so striking a manner, the efficacy of my remedies in removing his second attack ; and having observed, with much pleasure, the conflict which, for a long time, seemed to exist between the mercurial and tetanic diseases. Supposing the disease so much in my power, I thought it improper to lose the opportunity of trying the effects of other remedies, which have been recommended in tetanus.

The first I had recourse to was the oil of amber. This was exhibited in large and repeated doses. I gave it myself, and attended to its operation, and can, with safety, affirm, that it made no impression whatever upon his disease, but, on the contrary, the disease increasing, I was forced to lay it aside, and resumed the use of the mercurial frictions, and the warm bath, which again relieved him.

I cannot but say, that I again wished the mercurial action might subside, and his disease return, in order to witness the effects of tonics ; and I was gratified in this inhuman expectation.

In two days, the fever and spitting, and other effects of the mercury, had nearly left him, and his symptoms began to return, and finally became pretty violent. He was now (in the early part of the day) ordered the Peruvian bark, in the form of decoction, and directed to take it freely, every hour and a half. The following evening, he was no better. The bark was continued. In the night, his exacerbations became so violent, that his attendants put him into the

warm bath, two different times. In the morning, I found him with some fever, and a more than natural flow of saliva, and much better. The symptoms, however, soon returned, and increased, for twenty-four hours, under the use of the bark, when it became evident, that any longer reliance upon it would endanger his life. It was, therefore, laid aside. Free mercurial friction, on his jaws, thighs, &c., brought back the effects of the mercury, which were kept up, by friction twice or three times a day, and he got well.

From this case, I have no confidence in the oil of amber, and believe it to stand upon much the same footing, among the antispasmodics, that castor does. I also greatly doubt the effect of Peruvian bark, in this disease, though this has so positively been asserted to have cured it. You will please to observe, that where the bark has been used, it was not the *only medicine*. Wine is always exhibited with it; and I am led to suppose, that all the cases that have terminated favourably, under such treatment, have been cured by the wine alone. I should as soon believe vitriolated tartar to be the active part of Dover's Powder, as that the Peruvian bark was the active ingrédient in such prescriptions.

Hagerstown, March 29th,

1804.

XV. Some particulars concerning the Locust of North-America. Written at Nazareth, in Pennsylvania, August 27th, 1793. Communicated to the EDITOR, by the Reverend Mr. CHARLES REICHEL, of Nazareth.

BY the testimony of Jacob Rubel (of Bethlehem), who is 69 years of age, and has lived in different parts of Pennsylvania, ever since the year 1727, it appears, that the Locusts were, at that time, far more numerous in this country than they are at present. They appeared, in great numbers, every year, though it was observed, that about once in seven, eight, or nine years, they abounded more than usual, doing great damage to the apple and other fruit-trees.

Mr. Rubel has not noticed the exact years when they were most numerous; but he recollects, that some missionaries of the Brethren (Moravians), who resided at Shamokin, on the Susquehanna, between the years 1742 and 1750, informed him, that one of those years (he cannot say precisely which) the locusts covered, as it were, the woods in that district, and large droves of swine were fattened upon them. At the same time, none were seen on the other side of the Susquehanna, which proves that their visits are sometimes local.

By other accounts, it seems, that once between the years 1752 and 1758, and again in 1765, they were very numerous, especially in the woods and orchards.

The old people at Bethlehem and Nazareth say, that such numbers of them have never been seen since.

The year 1775 was another of the years in which the locusts abounded. Some persons, travelling from Bethlehem to Wyoming and Shamokin, found that, in many places, they had entirely destroyed the leaves of the trees. But such destruction did not take place in the cultivated parts of the country.

Their years have, since that time, been 1783 and 1792, when they have visibly decreased in the neighbourhood of Bethlehem and Nazareth. In 1792, those near Bethlehem were chiefly confined to their favourite spots, the orchards.

It was observed, that the locusts do great damage to the fruit-trees, especially the apple-trees. This is occasioned by their piercing the tender branches, in order to deposit in them their eggs. All the twigs or branches thus perforated, soon die. The eggs fall to the ground; but what changes they undergo, and how long they remain in the earth, is uncertain. From the above-mentioned circumstances, and the extraordinary increase of the locusts at the end of a certain period of years (varying, perhaps, according to the season), it has been supposed by many, that the eggs require at least seven years to come to perfection. So much is certain, that the locusts are often found in the chrysalis state, at the depth of seven or eight (some say fifteen) feet below the surface of the earth; which has further given rise to the

opinion, that the eggs, for three or more years, successively, sink deeper and deeper into the mould; then turn into a chrysalis, and afterwards, during the same number of years, continue rising.

Be this as it may, it appears, from actual observations, that seven, eight, or nine years, after the eggs of these insects have been deposited in the branches of the trees, an infinite number of aurelias make their way out of the earth, in a direction nearly perpendicular. At first, they are moist, soft, and of a whitish colour: but, by the heat of the sun, they soon become brown, dry, and consistent; and, after a few days, expand and produce the locusts. This commonly takes place at the end of May, or the beginning of June, when deep, round holes, about half an inch in diameter, the passages of the locusts out of the earth, may be seen under most apple, cherry, and other trees, whether the ground be a stiff clay, gravelly, hard-beaten, and apparently impenetrable to any creature of so small a size, that is not endued with extraordinary strength, and powers of action.

The preceding facts are curious, and might seem incredible, were we not acquainted with other phenomena of nature equally wonderful and astonishing. The subject, undoubtedly, deserves more attention than seems hitherto to have been paid to it.

There are several properties ascribed to the locust of North-America, which seem perfectly unaccountable; such as its long continuance in the egg and

chrysalis states; the depth of ground at which it is found, where it must be deprived of fresh air; the manner in which it arrives there; its finding its way again to the surface of the earth, in a manner so contrary to the usual course of nature; and its breaking through every barrier, in order to join the other tribes of insects at the proper time. Surely, their whole history is a striking demonstration of the mighty power of GOD, for the preservation and re-animation of the most insignificant of his creatures!

It is still worthy of remark, that, like most destructive insects and reptiles, the locusts seem to decrease in number, in proportion as population and cultivation improve the face of the country. Thus, through divine goodness, our enemies, whom we could not conquer, are bid, as it were, to depart from us, to wilder and more unfrequented regions, where they can do no injury to any one. Were they to come to us in large swarms *every year*, our young apple and other fruit-trees would all be continually and inevitably ruined.

N. B. No attempt is made to describe the locust itself, or the various species there may be of them.



REMARKS.

The preceding facts and observations respecting the Periodical Locust, though in many respects im-

perfect, and in some respects erroneous, were deemed too interesting not to be presented to the public. The Editor has, for several years, devoted a great deal of attention to the natural history of this insect. He designs to publish an extensive memoir on the subject. Meanwhile, it will be sufficient to observe, on the paper communicated by Mr. Reichel, that the locust, to which it principally refers, is the *Cicada Septendecim* of Linnæus (the *Tettigonia Septendecim* of Fabricius); that these insects appear to be very numerous every year, in some part or other of the United-States, but that they do not, in general at least, return *in the same district* of country, in less than sixteen or seventeen years. There is no good foundation for the assertion, that the locust continues for a long time in the egg-state; but it seems certain, that it is often wrapped up in the garments of a pupa, or chrysalis, for the long term of sixteen years!

THE EDITOR.

XVI. *Additional Observations on the Cicada Septendecim.* By the late Mr. JOHN BARTRAM. From a MS. in the possession of the EDITOR.

ON the 10th of May, 1749, in the morning, I observed (in the neighbourhood of Philadelphia) abundance of Locusts, just escaped from their skins. Some had turned of a dark brown; others white, with their wings moist. Some were creeping out; some were on the grass, on the bushes, rails, and bodies of trees.

11th and 12th. Abundance came out.

13th. They begin to make a noise.

14th. Many of them still come out.

15th. They still come out, in great numbers; and now there is a continual noise all over our woods and orchards, from morning to evening. They fly about and copulate.

16th. They begin to dart the twigs and lay their eggs, and continued until June, when they came no more out of the ground. By the 8th of this month, they were all gone.

In the latter end of April, this year, the locusts came so near the surface of the ground, that the hogs rooted up the ground for a foot deep, all about the hedges and fences, under trees, in search of them. They were then full of a thick white matter, like cream. Yet, in a few hours, the air changed them into a dark brown.

It is only the males that make a noise. This they do by a tremulous motion of two air-bladders under their wings.

The male, in the act of copulation, enters the body of the female, just between the rings of her belly and the root of her dart, by two crooked bodies at the extremity of his tail. As these bodies spread within

the female, the sexes are held together, for a long time; for there are a great many eggs to impregnate. I think each individual copulates but once.

I killed two of them in the beginning of the act, and was surprised, that the agonies of death did not part them, though they had been a quarter of an hour together.

Soon after copulation, they begin to dart the twigs, and lay their eggs, to a great number. It is surprising how soon they will work into the solid wood, and crowd it full of eggs, arranged close together, with one end close to the solid wood. How they directed the eggs in such order, I was puzzled to know; for they seemed so shy, that when I came near enough to observe, they would fly away. One day, however, my son caught one of them in the beginning of this operation, and taking a strong stalk of a weed, presented it to her. She directly fell to work, while he held the stalk in his hand. He carefully observed how she worked her dart into the stalk, and found, that she did *not* touch it, all the time, with her belly*. He permitted her to dart two or three places, and then searched and found, that she had laid eight or nine eggs. He, therefore, concluded, that she must convey the eggs into the stalk, through her dart, which we have always found to be hollow.

* It is certain, however, that sometimes she does push her dart so far into the twig, as to touch the latter with her belly. This I have particularly observed, while one of these insects was depositing her eggs in a branch of the Lombardy Poplar. EDITOR.

All kinds of wood, as well forest as orchard, were darted by them. I think they began with the Sassafras (*Laurus Sassafras*), this being a soft wood, and generally they made choice of the second or third year's shoot.

NOTE.

The earliest notice that I have been able to find concerning the Locusts, is that by Nathaniel Morton, in his work entitled *New-England's Memoriall*, &c. printed at Cambridge, in Massachusetts, in the year 1669. Speaking of a sickness which, in 1633, carried off many of the whites and Indians, in and near to Plimouth (Plymouth), in Massachusetts, he says, "It is to be observed, that the Spring before this Sickness, there was a numerous company of *Flies*, which were like for bigness unto *Wasps* or *Bumble-Bees*, they came out of little holes in the ground, and did eat up the green things, and made such a constant yelling noise as made all the woods ring of them, and ready to deaf the hearers; they were not any of them heard or seen by the *English* in the Country before this time: but the *Indians* told them that sickness would follow, and so it did very hot in the months of *June, July* and *August* of that Summer," viz. 1633. He says, "towards Winter the sickness ceased;" and that it was "a kinde of a pestilent Feaver." *New-England's Memoriall*, &c. p. 90 and 91.

EDITOR.

**XVII. Memorandums concerning the Earthquakes of
North-America. By the EDITOR.**

THE following memorandums respecting Earthquakes, in the western parts of the United-States will not, it is hoped, be altogether unacceptable to the philosophical reader, especially as the attention of the public has lately been drawn to this subject by Mr. Volney, in his *Tableau du Climat et du Sol des Etats-Unis d'Amerique.*

“ We are led to conclude (says this elegant writer), that the Atlantic coast (of the United-States) has been shaken and overturned by earthquakes, to which we shall hereafter show it has been subject, while all the country westward of the Allegheny has been undisturbed. Thus, I am assured by Dr. Barton, that words corresponding with earthquake and volcano are familiarly used by the aboriginal natives of the east, whereas no such terms can be found in the languages of the western tribes, volcanoes being commonly connected with earthquakes; and accordingly we find basaltic masses in the vallies of the Allegheny. Whether there exist any ancient craters, is worthy of particular inquiry*.”

In another part of his work, the traveller says, “ Though North-America has only been known about

* A View of the Soil and Climate of the United States of America, &c., page 54. American edition, translated by C. B. Brown.

two centuries, this period, so brief in the annals of nature, has supplied us with numerous proofs, that earthquakes have been violent and frequent throughout this region, in former ages, and that they have occasioned those subversions, of which the maritime country affords continual and striking indications*.”

“ I have already observed,” continues our author, “ that no trace of earthquakes is to be found in the western country ; that the Indian languages contain no word corresponding with this phenomenon : I may add, from the authority of Dr. Barton, that they no longer have in use a name equivalent to volcano, of which they can perceive no vestiges amidst the lakes, but of which there are numerous remains on the Allegheny. I was informed, at Detroit, that the northern Indians relate a story of a mountain, somewhere far inland, which sometimes throws out smoke : but the report wants a surer foundation†.”

I feel no disposition to claim the honour of having first suggested the theory which Mr. Volney has published, concerning the cause of the difference in the arrangement of the strata of stoney matters in the countries east and those west of the Alleghaney-mountains. It may not, however, be amiss to observe, that this theory was communicated by me to Mr. Volney, when I had the honour of enjoying his society in Philadelphia, in the years 1797 and 1798.

* American translation, page 97.

† Ibid. page 100.

My own travels in the western parts of the states of Pennsylvania, Virginia, New-York, &c., had made me well acquainted with the fact, that the strata of limestone, slate, freestone, coal, iron-ore, &c., are very generally disposed in a *horizontal* direction in those parts of the country; while, in the Atlantic district, the strata of the same materials are very seldom horizontally arranged, but, on the contrary, are disrupted, “and, as it were, jumbled together by violence.”

Having become acquainted with the fact, I began to speculate upon it. Professor Williams’s paper on the Earthquakes of New-England*, to which I referred Mr. Volney, solicited much of my attention. From this paper, I learned, that the principal line of direction of those earthquakes had been from the north-west to the south-east†. I had, moreover,

* Observations and Conjectures on the Earthquakes of New-England. See Memoirs of the American Academy of Arts and Sciences. Vol. I. Part II. No. VIII.

† “Another thing observable in the earthquakes of New-England is, they have all gone in much the same *course*. As to two or three of the earthquakes, we have no account of their *course*: but in all those in which it was determined, there is a very great agreement. They are all described as coming from about north-west, and going off about south-east. As this was the case with all whose direction was observed, we may rationally conclude, that they all proceeded in pretty much the same general track; in a path from about north-west to south-east, though with many small deviations and irregularities, in particular places.” Memoirs, &c. p. 281.

learned, that the Indian inhabitants residing in that part of the western country where the horizontal strata most abound (on the waters of the Ohio, &c.), though many of these tribes were known to have resided in the country, for a very considerable period of time, preserved no memorials of the existence of earthquakes in their country, and had even no word for the phenomenon in their languages; “ while (to use Mr. Volney’s words) equivalent terms are common and familiar in the dialects of the east.”

I now thought it highly probable, that it would be easy to explain the difference in the disposition of the eastern and the western strata, by calling to our aid the courses of the American earthquakes. I even composed an extensive memoir on the subject, which was shown to the late Mr. Rittenhouse, Mr. Volney, and other gentlemen.

I should hardly have thought it worth noticing, in this place, the *primordia* of this theory, if I did not now possess facts, which convince me, that it is entirely unfounded. I cannot, at present, attempt to point out the feeble parts of this system. This will be done, at large, in another place. It will be sufficient to observe here, that earthquakes can be shown to have pervaded many of those parts of the continent, in which the horizontal arrangement of the strata is almost an universal feature of the country.

Of these western earthquakes I shall slightly notice two, in this place.

The first of them is thus spoken of by Mr. John Heckewelder, in answer to a set of queries, which I had sent him. His letter is dated December 23d, 1795.

" Coshachking, which was, for many years, the seat of government of the Delaware-Indians, was situated on the south-east side of Muskingum-River, exactly opposite to the mouth of White Woman's-Creek (or the great Forks of Muskingum). I lived, at the time the earthquake was perceived, about two miles lower down this river, and in a southerly direction. I am not positive from what quarter the earthquake came. It came quick, and was but of short duration. I well remember, however, that on its beginning, the house was raised on the east side. The dead-thundering noise, which appeared to be under ground, followed (to the best of my recollection) the shock. This dead-like sound was in a southerly direction from the place where I was, and (as I supposed) scarcely a mile distant from me. However, as this sound was in the same direction the river ran, it might have been at a greater distance.

" This whole country abounds with coal-mines, many visible above ground.

" I did not perceive, that this earthquake occasioned any visible alteration in the strata of stone. There is not much stone in this country; and where there are stones I always thought them *horizontal*, except on one part of the river (Muskingum), where there

are high steep hills, covered with stone, and, to appearance, these lie in every, the most irregular, direction.”

The other earthquake occurred at the Falls of Niagara, on the 26th of December, 1796, about six o’clock in the morning. It seemed to proceed from the north-west, and did not last more than two seconds. But it was sensibly felt for fifty miles around the Falls. A particular account of this earthquake will be gladly received by

THE EDITOR.

SUPPLEMENT.

The following facts, &c., in addition to the above, may, with some propriety, be introduced in this place. They are copied from the manuscripts of the late Mr. John Bartram.

In a letter, dated July the 18th, 1750, he says, “ We have had, within these thirty years, four earthquakes. One of them, about twelve years ago*, was felt about eleven o’clock at night. It shook our

* Professor Williams does not mention any earthquakes as occurring about the year 1738, nearly corresponding to the time Mr. Bartram speaks of. The Professor observes, however, that there “ had been some small shocks” between 1732 and 1744, when “ there was an earthquake, so considerable, as to be generally felt through the province.” Memoirs, &c. p. 270.

houses, so as to rock the chairs, tables, and chests of drawers, and affrighted some of our women. The others seemed like thunder at a distance, or a hollow rumbling in the ground. If the observations of some people hold good, we may expect another soon*; for we have now the driest season that, I believe, ever was known. The ground near us has not been wet plough-deep, since the beginning of March. Our spring was extremely dry, windy, and cold; and since June, the weather has been very hot and dry. Our fields have no more grass in them than in the midst of winter; and the meadow-ground, that used to bear two good crops, has no more grass than the middle of the street, both root and branch being scorched as with fire; and the ground is as dry as dust, two feet deep. The very briars are withering, and the fruit upon them appearing scorched, and drying up. Our springs have failed, and the runs dried up. Yet, notwithstanding this extraordinary drought, we have rarely been without rain for five days, since March; and during the winter we were not so long without snow, though we had but three snows that staid long with us, all the winter: most of the rest would hardly cover the ground. Thus, in the sum-

* I cannot find, however, that any earthquake was felt about this time. From 1744 to 1755, no mention is made by Professor Williams of any earthquake in the colonies. In the month of November of this year, an earthquake "the violence" of which "was the greatest of any we have ever had in the country (Williams, p. 272)," was felt, and its influence extended to Pennsylvania, and even farther south. **EDITOR.**

mer, one week's rain, every day, would scarcely afford as much moisture as one common nightly dew."

XVIII. *Observations on the Power of Habit in Vegetables. In a Letter to the EDITOR, from WILLIAM BARNWELL, M. D.*

SIR,

I WAS highly gratified with the subject of your lecture* to-day, on more than one account. In the first place, because the physiology of vegetation has hitherto been, in my opinion, too much neglected. Secondly, because the effects of the change of climate on vegetables, &c., is a mode of investigating their physical properties which is almost new, although it is, certainly, a subject of much importance with respect to agriculture, as well as medicine. And, lastly, as it has some connection with a subject which my own employment, for some years of my life, has led me to investigate, that is, the effects of the changes of climates on animals, and particularly on man.

The fact which I mentioned to you, of the Gooseberries and Currants, &c., when carried to warm climates, turning *evergreens*, and ceasing to bear fruit, I learned in the island of St. Helena, in the year 1789, being then surgeon of the Royal Charlotte-Indiaman, in the employ of the Honourable

* On the Power of Habit in Vegetables. EDITOR.

East-India Company. She was, during that voyage, store-ship to the island ; and being by far the largest ship in the employ, we carried out, by order of the Company, a number of vegetables, in pots and boxes of earth. Among the rest were Gooseberry and Currant bushes. But it happened, that the inhabitants, and the Company's officers on the island, were better acquainted with the nature of the climate, and its effect upon these vegetables, than the Directors. They remembered Currant and Gooseberry bushes having been sent there, I believe oftener than once : but they seldom ever produced any fruit after the first year. They were luxuriant in foliage ; and turned to evergreens, and got out of the habit of producing buds, blossoms, or fruit, not having the vicissitudes of season to bring about these changes, &c. (See Note 1, at the end of this paper.)

I remember an observation of the Marquis de Chastelux, when he was setting out from Williamsburg to Monticello, that it appeared to be summer in the heavens, and winter on the earth. This was in the spring, and the heat was great, but no appearance of vegetation had then taken place. When I was in South-Carolina, in the spring of the year 1793, a similar phenomenon struck me very forcibly. The heat was rather distressing, long before there was any other appearance of vegetation than the Peach-blossoms ; and I have no doubt, that the same phenomenon would be remarked by any European, the first spring he should pass in the southern states : for in Europe, vegetation begins with a very moderate de-

gree of heat. It must also be remarked, though not in so great a degree, by the inhabitants of the northern, when they remove to the southern, states.

We may apply these observations to some public advantage. It is said, that the Virginians have often attempted to cultivate Rice, but that it never came to perfection; because their summers are shorter than, and not so warm as, those of Carolina and Georgia, from which parts of the continent, there can be no doubt, they had their seed-rice, which grain requires all the long and warm summers of these last-mentioned states to bring it to maturity. But as vegetables, in a course of time, become capable of bearing colder climates than their native ones, this is one of the means which might be used to habituate the Rice to Virginia. But I have, for some years, thought of a more expeditious means, which, there can be little doubt, would succeed: this is to bring the seed-rice from the northern parts of Europe, where it comes to perfection.

Rice is the principal grain about Milan, in Italy; and it grows in Savoy, as I was informed by a gentleman (who was a native of the country), of whom I inquired, with a view to this very subject. You likewise mentioned, to-day, that it grows in some parts of Germany. (See Note 2.)

To import Rice for seed, it should be brought from the farthest northern situation in which it arrives at perfection. And as all these places, just men-

tioned, are beyond 45° of north latitude, there remains no doubt, in my mind, that the plant would ripen not only in Virginia, but also in Maryland (See Note 3.); for although the cold of these last-mentioned countries is greater in winter, the heat of the summer is very little different from that of corresponding latitudes of Europe.

In connection with this subject, it may be observed, that the seeds of Grasses, Clover, &c., are annually carried from Pennsylvania to Virginia. By the increase of heat, to which they are now exposed, they flourish luxuriantly for a few years, but they wear out, and cannot perpetuate themselves, for many years, in the same perfection: at least, in the lower part of the country, as about Norfolk, I know this to be the case. Whether this is owing to the barrenness of soil, or to their vegetative (or vital) energy being exhausted, I am not quite certain: but I rather incline to the latter opinion; for both vegetables and animals become, by degrees, naturalized to the countries which they inhabit; and, in the course of a few generations, are but little different from the aborigines of the places, as far as regards their physical constitutions. Some external varieties they do preserve for a great many ages; and if they be kept unmixed, they may never lose them; as is the case with the native Gentoos of India, and their Mahometan conquerors.

When trees, or other vegetables, are transplanted into warmer climates, they are quicker in their growth

than the natives of the same species : for when they have the quantity of heat to which they were accustomed in their native soil, they bud, put forth leaves, &c., always before those which are the aborigines : as may be seen, every year, in the State-House-square (Philadelphia), where there are English and American Elms, in rows, along-side of each other. The English ones always spread their leaves some time before the American ones, because these last are natives of a warmer climate. (See Note 4.)

Whenever I observe vegetable productions spread their leaves, or ripen their fruit, very early in the summer, I immediately conclude, that they would endure a colder climate ; and, upon inquiry, this will, in general, be found to be the case. Thus Strawberries and Cherries are our earliest fruits here (in Pennsylvania), and they both grow far to the northward. Barley and Rye are our earliest grains, and they grow further north than any others of the same family. Indian-corn (*Zea Mays*) requires much heat, and does not produce seed to the north. (See Note 5.) Wheat soon ripens here, and it grows to 55° of north latitude, in Britain and Ireland.

Those trees, whose foliage is expanded early, commonly bear very cold climates, as the Laurel, Holly, and Ivy ; and those trees or vegetables, which are tedious or backward in spreading their leaves, or latest in bearing ripe fruit, are generally the natives of warmer climates. For every vegetable, as well as

every animal, would appear to have a predilection for one mode of temperature more than another.

*Philadelphia, May 6th,
1801.*

NOTES ON THE PRECEDING PAPER. BY THE
EDITOR.

Note 1. Page 68. We have many instances of the like change induced in vegetables by climate. Thus the Quince-tree (*Pyrus Cydonia*) drops its leaves in the northern countries of Europe, but becomes an evergreen when it is transplanted to the south of France, the island of Minorca, and other southern climates (See *Elements of Botany: or Outlines of the Natural History of Vegetables.* Part First. p. 66. Philadelphia: 1803). It appears from Father Loureiro's *Flora Cochinchinensis*, that the Common Sassafras (*Laurus Sassafras*), and other vegetables that are natives of Cochinchina, and of Pennsylvania, and other parts of North-America, are evergreens in the former country, while in the latter they always drop their leaves in the fall and winter.

Note 2. Page 69. It is cultivated on the banks of the Weser, and in Hungary. It succeeds very well in Spain, and has been cultivated, for ages, in the neighbourhood of Verona, in Naples, &c.

Note 3. Page 70. It is a curious fact, which is now almost forgotten, that Rice was once cultivated, with some success, in the neighbourhood of Salem, in New-Jersey, nearly in latitude $39^{\circ} 40'$. This was towards the latter end of the seventeenth century. Why the cultivation of the vegetable was laid aside, I have not learned; in all probability, it was because it was found, that the plant would not *always* ripen its seed, before the setting in of the severe frosts. But if, one hundred years ago, the Rice *sometimes* brought its seed to perfection, in the tract of country which I have mentioned, it would doubtless, by the present time, have “learned” to ripen it much more frequently; and this too even admitting (which I do admit), that no very essential change has taken place in the temperature of the climates of the Atlantic states.

This mode of reasoning may afford some ray of hope to the inhabitants of those parts of Virginia, who, at this time, cultivate *small quantities* of Cotton, for their own family consumption, but who entertain a fear, that the early frosts of their climate will, for ever, prevent them from cultivating this valuable vegetable, upon a more *enlarged scale*. I think it very probable, that Cotton will, at some future period, be cultivated, with success, at least as far to the northward, on the Atlantic side of the United-States, as the northern boundary of Virginia. (See *Elements of Botany, &c.* Part III. page 98.) How much further than this it may be cultivated, time must determine.

Note 4. *Page 71.* This statement is not quite correct. The Elms, in the State-House-area, are not the same, but two different species. In regard, however, to many trees, that are, confessedly, the same in species, Dr. Barnwell's assertion is confirmed by the observations of many writers.

Note 5. *Page 71.* There are many varieties of Indian-corn, and some of these varieties are capable of enduring much more northern latitudes than others. The same remark applies to the Rice, of which a late botanist (Willdenow) informs us, that he possesses eighteen varieties. Rumphius expressly informs us, that some of the varieties of this vegetable ripen their seed earlier than others. These things are worthy of the attention of my countrymen. With respect to the Indian-corn, our Indians (Delawares, &c.) say, that the true and genuine variety of this (which they call *Lenni-Chasquem*) never took more than ninety days, from the day it was planted, until it was perfectly ripe. I know not, whether they have, at present, this kind of corn, which, I doubt not, came from the south. When the Indians move to a new country, they always endeavour to discover, what variety of corn best suits their new soil, and at what time the people of the country plant it. The Chippewas have a kind of low corn, with a short ear, which seems best adapted to their northern situation. In the state of Ohio (on the waters of the Muskingum, Sciota, &c.), the Indians were accustomed to plant the high-growing varieties of corn, which, when planted about the 20th of May, will be ripe about

the middle of September, nearly one month later than the *Lenni-Chasquem*, before-mentioned. The Muskingum corn will not now come to perfection about Detroit and in Canada ; but to these climates it may, it can hardly be doubted, be naturalised, or habituated, in a long course of time.

XIX. *Notice of the Travels of a Mohawk-Indian.*

DANIEL GREEN, a Mohawk-Indian, has spent two years in the north-west parts of North-America, at the distance of many hundred miles beyond Detroit. Hunting was the principal object he had in view, in taking this extensive journey. But the following observations will show, that he was not entirely an incurious traveller.

He says, that, during two whole summers, he saw but two serpents, and that these were of the striped kind, commonly known by the name of Garter-Snakes (*Coluber saurita*). That the game of the country is Buffaloe (*Bos Americanus*), Bears, both White and Black, the former much larger than the latter, with a remarkably broad foot, which is furnished with nails or claws, as long as a man's finger. He likewise met with Moos (*Cervus Alces*), the Common American Elk ; Goats which climb up the rocks ; a kind of Sheep with a hairy back, much like a deer, but having long wool over its belly, and large horns (one of which he saw that weighed seven pounds) ; a species of deer which the French call Capree ; the

Fisher (which I believe is a species of *Mustela*), the Martin (*Mustela Martes*), the Otter (*Mustela Lutra*), the Beaver (*Castor Fiber*), and one species of Fox.

He met with extensive plains or prairies, and with only a very few trees. These were Aspin (*Populus tremuloides?*), Birch (what species is not mentioned), and Spruce-Pine (*Pinus*). Grass grows on these plains not more than six inches in height, except in some swamps, where it is higher and ranker.

He met with a nation of Indians, whose language is so nearly allied to that of the Sawwannos, or Shawnee, that whoever understands the one understands the other.

He met with various kinds of birds, which he had never seen before. Some of them are songsters all the day.

In this remote part of the continent, he says, there is no rain at all in the winter-season; at least during the two winters, in which he resided in the country, it never rained once. Even in the summer, there are no *set* rains. The rains which do fall, are precipitated in gusts.

The preceding notice was communicated to the Editor by Mr. John Heckewelder, formerly of Bethlehem, but who, at present, resides on the river Mus-

kingum. The Editor begs leave to observe, that there does not seem to be any good cause to doubt any part of the relation of Green. Some of the zoological facts which he has mentioned, may be depended upon. The Editor has seen a set of the claws of a species of Bear from the country adjacent to the sources of the Missouri. They were, at least, as large as the Indian traveller represents those he saw to have been. The existence of a large species of Sheep, in the same tract of country, is no longer doubtful. This is probably the Argali of Asia. It is, unquestionably, the *Taye* of the Monqui-Indians, who reside in California. A figure of this animal was published by Venegas, as early as the year 1757, in the first volume of *Noticia de la California*, printed at Madrid*.

THE EDITOR.

XX. *Some Account of the Disease called the HOLLOW-HORN.*

THE Hollow-Horn, as it is called in Virginia, and other parts of the United-States, is a very formidable disease, and one which demands more attention than has yet been bestowed upon it.

This disease is confined, it is believed, to the animals of the genus *Bos*, particularly to the common

* *Noticia de la California, y de su Conquista temporal, y espiritual, hasta el tiempo presente ; &c. &c.* In three volumes, 4to.

species that is domesticated in the United-States ; the *Bos taurus*, or common ox. Whether it ever attacks the native buffaloe (*Bos Americanus*) I have not heard.

It appears to be principally a disease of the horn, which becomes hollow, and filled with a corrupted or purulent matter. The animal is also affected with a running at his eyes, and is very sluggish. Sometimes, he throws his head about a great deal, as if experiencing much uneasiness. The horn is found to be of a lower temperature than natural.

This disease is very common in Virginia, both in the upper and in the lower country : that is, on both sides of the Blue-Ridge. But it is thought to be more common in the former tract of country, particularly in the great calcareous valley, called Berkeley-Valley. It is also common in the settlements on some parts of the Alleghaney-Mountains, as in Virginia, Maryland, &c.

It prevails at different seasons of the year, but particularly in the spring.

The cause of this disease is not completely known to us. It appears, however, to be intimately connected with the manner of treating the horned cattle. It is observed to be peculiarly prevalent among those cattle which have been badly wintered, and poorly fed : hence it is not an uncommon adage in Virginia, “ Feed your cattle well, and they will escape the Hollow-Horn.”

If we may depend upon the testimony of the farmers and planters, the mode of treating this disease is brought to considerable perfection. Some of them advise to saw off a piece of the horn, that a vent may be given to the escape of the purulent matter. This, it is said, assumes a thicker and better consistence, and colour, after the operation.

Others recommend the sawing off of the end of the horn, and after evacuating the matter, to fill up the hollow, with tar and tallow.

Others, again, bore a small hole into the horn, in order to evacuate the matter. This is thought to be a better method than sawing off the end of the horn, as from the latter operation, bad effects have arisen, the flies proving very troublesome to the animals thus treated, especially in warm weather.

Another method, which has been confidently recommended to the Editor, as the best remedy for the hollow-horn, is to make a small orifice, by means of a gimlet, into the horn, and after evacuating the matter, to fill the cavity with a composition of common black pepper (finely powdered) and vinegar. The orifice is then closed with a proper plug, and, at the end of three or four days, it is opened again. It is positively asserted, that by this treatment the core or pith of the horn, which had been destroyed, is regenerated.

*From the Editor's MS. Journal,
for the year 1802.*

XXI. *On the Salivating Effects of Digitalis Purpurea, or Common Foxglove. In a letter from Dr. MATHLON GREGG, to Dr. THOMAS WALMSLEY. Communicated by the latter to the EDITOR.*

IN my last, I mentioned the death of Miss P——, and Mr. C——'s child. I shall now give you a more particular account of these cases, with the effect of the Digitalis. Miss P——, I need not tell you, was a young lady of a constitution more than commonly robust. She was about eighteen years old, and of a family in which the phthisis pulmonalis was an hereditary disease. When I was called to visit her, I was informed, that she had been ill two months, and that the affection^s of the lungs was brought on by a cold. I found her labouring under violent inflammatory symptoms, with a dry cough. I advised blood-letting, and insisted upon it, at different times : but I could not obtain her consent. I gave her a cathartic, digitalis, small doses of tartar emetic, &c., but without much good effect. She soon began to spit a purulent matter, and, in a short time, she was much debilitated. I gave calomel, in order to salivate her, but did not succeed. The medicine was omitted, and she took nothing but a mixture made of liquorice with a little anodyne, for a week or more, when I again began with the digitalis. After continuing the use of this for eight or ten days, a copious ptyalism came on, which lasted some time, but without producing any good effect. She died a few days after.

I could not positively say, that the ptyalism, in this case, was produced by the digitalis alone; because calomel had been used. But in the case of Mr. C——'s child, I think there can be little doubt on the subject. She was about eleven years old, and had received an injury on the right side of the thorax, from a fall, several weeks before I saw her, during which time nothing had been done for her. I found her much debilitated. She had a distressing cough, which came on two or three times in twenty-four hours, and spat large quantities of a very fetid, yellowish matter. I gave her the digitalis, which, after some time, excited a ptyalism to a considerable degree. The salivary glands were swelled, and she complained much of a sore-mouth. The medicine was purposely omitted for a few days, when all these symptoms went off. It was again administered, and the ptyalism was again produced.

In this case, not a particle of calomel had been used, and, indeed, very little of any thing but the digitalis. This case likewise proved fatal.

Dr. Wilson likewise informs me, that digitalis has produced a very similar effect, in one of his patients.

*Attleborough (Pennsylvania),
December 29th, 1801.*

The preceding facts will, perhaps, appear the more worthy of notice, when it is recollectcd, that the cele-

brated Dr. Withering seems to have remarked the salivating effect of digitalis, many years ago. "I am doubtful (he says) whether it does not sometimes excite a copious flow of saliva." *An Account of the Foxglove, and some of its medical uses, &c.* p. 184. Birmingham: 1785. Some of the cases which the doctor relates, in this work, show, I think, in a very satisfactory manner, that this vegetable, so remarkable for its effects in lowering the pulse, &c., has sometimes really produced a great increase of the salivary fluid. The Squill (*Scilla maritima*), a vegetable in many respects allied to digitalis, has also been known to salivate; and it is worthy of observation, that several other diuretic medicines produce the same effect. The Seneka Snake-root (*Polygala Senega*) may be mentioned in this place. (See *Collections for an Essay towards a Materia Medica of the United-States*. Part First, page 25. Part Second, page 37.) It is much to be regretted, that the generality of physicians devote so little attention to the various (though *less constant*) effects of vegetables upon the human and other animal systems. Without much of philosophic attention, in this way, ages must elapse before a satisfactory arrangement of the articles of the **MATERIA MEDICA** can be accomplished: for, as yet, every arrangement is defective, and liable to many objections.

THE EDITOR.

XXII. *Hints relative to the External Employment of the Leaves of the Liriodendron Tulipifera, or Tulip-tree, in cases of Gout and Rheumatism.* By the EDITOR.

THE Liriodendron Tulipifera, or Tulip-tree, one of the most common trees in many parts of the United-States, has been the subject of much attention among the physicians of Pennsylvania, Virginia, &c. But, it is probable, that all its medical properties are not yet known.

In the course of a tour through Virginia, in the year 1802, I was informed, that it was the practice of some of the physicians, in that State, to apply the green leaves of this tree to the local pains in cases of rheumatism and gout, and that much advantage had been derived from the practice. Several layers of the leaves are directed to be laid upon the affected parts, from which they excite a profuse perspiration, which seldom fails to afford relief to the patient.

Two very respectable physicians residing in Winchester (Virginia) assured me, that they had found the Tulip-tree-leaves, thus employed, very useful. One of these gentlemen informed me, that he had heard of instances in which they have acted as vesicatories; though this, he observed, is a rare occurrence. They sometimes excite a considerable degree of pain in the part to which they are applied.

I have myself tried the effect of the leaves in my own person ; and, *I think*, with very decided advantage. Applied to the feet, they seemed very soon to induce a pleasurable glowing heat in the part, and a considerable degree of perspiration. I can hardly entertain a doubt, that these were the effects of the application. I have also recommended the leaves to some of my patients, by one of whom, in particular, they were thought to be very useful. They were applied to the head, in a case of paralysis.

The active property, whatever may be its nature, that resides in the green leaves of the Liriodendron, is not entirely lost in the dried leaves. Accordingly, in Virginia, these last are directed to be employed, when the former cannot be procured. It will not be supposed, that they are as efficacious as the fresh leaves.

A lady, in Virginia, informed me, that she has known the dried leaves, after having been soaked in milk and water for some time, to afford much relief when applied to recent burns.

These things are recorded, “ with hesitation, and with doubts.” An excess of incredulity is, perhaps, not less injurious to the progress of useful truth than the opposite state of the mind. MEDICINE IS NOT YET A SCIENCE. In order to render it worthy of this name, we must collect facts with labour, and with patience. Nor must we entirely withhold from public view, assertions, however improbable, v-

vided they rest upon respectable authorities. "The fear of having credulity imputed should never hinder the publication of physical facts—however unaccountable they may appear; for, no one will pretend that we already are acquainted with all the laws of nature: on the contrary, they ought to be made generally known, that their truth or falsehood may be established by numerous experiments, especially when, as in the present instance, the means are so much within the reach of" so many, "who may wish to determine the matter for" themselves.

In this place, it may not be amiss to mention (though the fact has but little connection with the preceding ones), that the wood of the Liriodendron, especially the variety with yellow wood, owing to its great sensibility with respect to the changes of the atmosphere, is found to make an excellent hygrometer. This wood is observed to shrink and swell very considerably, by reason of the alterations in the degrees of dryness and moisture in the air. For the hygrometer, a narrow, thin, and broad piece of the wood, cut across the grain, is used. Mr. William Dunbar (to whom, I think, we owe the knowledge of the fact) found, that the sensibility of the wood was improved by boiling it, after it had been made very dry, in a solution of mild alkali, or common potash.

XXIII. *On the Use of Plaster of Paris (different varieties of Gypsum, or Sulphate of Lime), as a manure, in Virginia. In a Letter to the EDITOR, from his Brother, Mr. RICHARD P. BARTON, of Frederick-County, Virginia.*

THE use of Plaster of Paris is becoming more and more general. It is found to answer well upon some of our soils, particularly such as are dry, friable, and contain white flint; also upon what are termed slate-lands. In such soils as are highly calcareous, I think little, if any, effect is produced. On my own farm, which contains much of the latter soil, the effect of plaster is never visible; but on my slate-lands, adjoining the limestone, the influence of plaster is great, particularly on clover.

It is my opinion, that it never produces any visible effect upon lands that are highly calcareous. This theory is contradicted by many persons here, who say, that it has much benefited their crops, although their lands are limestone-lands. But, in fact, at least half the surface soil of lands denominated limestone is not calcareous, or contains calcareous earth in small quantity. Upon inquiry, in every instance, I am told, that the effect of plaster is greatest upon the poorer or thinner soils, in the intermediate spaces between the beds or ledges of limestone. These poor spots generally lie higher than the beds of limestone, and cannot, therefore, receive the washings from them. Their complexion, which is generally pale, proves, that

they do not contain the limestone principle, or at least not in a sufficient degree, to answer the full purposes of vegetation. Here the plaster acts powerfully, whereas its influence cannot be discovered in the dark calcareous soils, mixed with limestone.

I have traced two rows of Indian-corn, half a mile, which were plastered for an experiment, and never could discover the least change produced by the plaster in the soils near limestone-breaks (as we call them), which were evidently highly calcareous. But where the rows passed over thin, pale-coloured land, particularly on knolls, at a distance from limestone, the corn showed, that a great change had been produced by the plaster; not that it was better than that growing upon the limestone spots, but that it was equally luxuriant; whereas without the aid of plaster, it would not have been half as good.

Frederick-County, May 28th,
1804.

The Editor will thankfully receive any additional facts and observations, from any of his correspondents, concerning the use of Gypsum, as a manure, in the United-States. Even *conjectures* concerning the mode of its operation, will be acceptable.

XXIV. Facts relative to the Food of the Humming-Bird. By the EDITOR.

IT is very generally supposed, that the Common Humming-Bird (*Trochilus Colubris* of Linnaeus) subsists exclusively upon the nectared juice, or honey, which it sips from various species of flowers. Mr. Brandis, however, asserts, that upon dissecting one of these birds, he had found in its stomach, the vestiges of insects*. I formerly noticed the observation of this naturalist, with the remark, that the Humming-Bird was "one of the last birds one would have suspected of feeding on animal food†."

A fact lately communicated to me, leaves me no room to doubt, that the *Trochilus* does actually subsist, in part, upon different species of insects. In the course of the last summer, a friend of mine (upon whose veracity I can depend) found in the stomach of one of these little birds, two pretty large spiders, which, from appearances, must have been very recently taken in; together with the vestiges, such as the wings, &c., of flies. He thinks the bodies of the spiders were nearly as large as those of the common house flies: a circumstance which, of itself, will be sufficient to show, that the insects were not accidentally taken in, while the bird was busied in sipping

* See the article *Trochilus*, in Gmelin's edition of the *Systema Naturæ*. Tom. I. p. 485.

† See Fragments of the Natural History of Pennsylvania. Part First, page 21. Philadelphia: 1799.

the nectared juice ; but that insects constitute a *necessary*, or, at least, *usual*, part of its food.

Facts such as these are highly interesting. They make part of a connected system, which I have long since adopted, and even publicly taught, that *an entirely or purely herbivorous animal is hardly known* ; at least among the higher series of animals (as we call them), such as the *mammalia* and the birds, in particular.

These facts will hardly fail to be deemed interesting, in another point of view. They must point out the necessity of our destroying, with more hesitation, many of the numerous species of birds with which our country abounds ; since a very large proportion of these birds subsist wholly, or in part, upon different species of insects, many of which are among the most injurious with which we are acquainted*.

XXV. *Anecdotes of an American Crow.* By WILLIAM BARTRAM.

IT is a difficult task to give a history of our Crow. And I hesitate not to aver, that it would require the pen of a very able biographer to do justice to his talents.

* See Fragments, &c. Part First, p. 21—24.

Before I enter on this subject minutely, it may be necessary to remark, that we do not here speak of the crow, collectively, as giving an account of the whole race (since I am convinced, that these birds differ as widely as men do from each other, in point of talents and acquirements), but of a particular bird of that species, which I reared from the nest.

He was, for a long time, comparatively a helpless, dependent creature, having a very small degree of activity or vivacity, every sense seeming to be asleep, or in embryo, until he had nearly attained his finished dimensions, and figure, and the use of all his members. Then, we were surprised, and daily amused with the progressive developement of his senses, expanding and maturing as the wings of the youthful phalæna, when disengaged from its nymphæ-shell.

These senses, however, seemed, as in man, to be only the organs or instruments of his intellectual powers, and of their effects, as directed towards the accomplishment of various designs, and the gratification of the passions.

This was a bird of a happy temper, and good disposition. He was tractable and benevolent, docile and humble, whilst his genius demonstrated extraordinary acuteness, and lively sensations. All these good qualities were greatly in his favour, for they procured him friends and patrons, even among men, whose society and regard contributed to illustrate the powers of his understanding. But what appeared

most extraordinary, he seemed to have the wit to select and treasure up in his mind, and the sagacity to practise, that kind of knowledge which procured him the most advantage and profit.

He had great talents, and a strong propensity to imitation. When I was engaged in weeding in the garden, he would often fly to me, and, after very attentively observing me in pulling up the small weeds and grass, he would fall to work, and with his strong beak, pluck up the grass ; and the more so, when I complimented him with encouraging expressions. He enjoyed great pleasure and amusement in seeing me write, and would attempt to take the pen out of my hand, and my spectacles from my nose. The latter article he was so pleased with, that I found it necessary to put them out of his reach, when I had done using them. But, one time, in particular, having left them a moment, the crow being then out of my sight, recollecting the bird's mischievous tricks, I returned quickly, and found him upon the table, rifling my inkstand, books, and paper. When he saw me coming, he took up my spectacles, and flew off with them. I found it vain to pretend to overtake him ; but standing to observe his operations with my spectacles, I saw him settle down at the root of an apple-tree, where, after amusing himself, for awhile, I observed, that he was hiding them in the grass, and covering them with chips and sticks, often looking round about, to see whether I was watching him. When he thought he had sufficiently secreted them, he turned about, advancing towards me, at my

call. When he had come near me, I ran towards the tree, to regain my property. But he, judging of my intentions, by my actions, flew, and arriving there before me, picked them up again, and flew off with them, into another apple-tree. I now almost despaired of ever getting them again. However, I returned back to a house, a little distance off, and there secreting myself, I had a full view of him, and waited to see the event. After some time had elapsed, during which I heard a great noise and talk from him, of which I understood not a word, he left the tree, with my spectacles dangling in his mouth, and alighted, with them, on the ground. After some time, and a great deal of caution and contrivance in choosing and rejecting different places, he hid them again, as he thought very effectually, in the grass, carrying and placing over them chips, dry leaves, &c., and often pushing them down with his bill. After he had finished this work, he flew up into a tree, hard by, and there continued a long time, talking to himself, and making much noise; bragging, as I supposed, of his achievements. At last, he returned to the house, where not finding me, he betook himself to other amusements. Having noted the place, where he had hid my spectacles, I hastened thither, and after some time recovered them.

This bird had an excellent memory. He soon learned the name which we had given him, which was Tom; and would commonly come when he was called, unless engaged in some favourite amusement, or soon after correction: for when he had run to

great lengths in mischief, I was under the necessity of whipping him ; which I did with a little switch. He would, in general, bear correction with wonderful patience and humility, supplicating with piteous and penitent cries and actions. But sometimes, when chastisement became intolerable, he would suddenly start off, and take refuge in the next tree. Here he would console himself with chattering, and adjusting his feathers, if he was not lucky enough to carry off with him some of my property, such as a pen-knife, or a piece of paper ; in this case, he would boast and brag very loudly. At other times, he would soon return, and with every token of penitence and submission, approach me for forgiveness and reconciliation. On these occasions, he would sometimes return, and settle on the ground, near my feet, and diffidently advance, with soft-soothing expressions, and a sort of circumlocution ; and sit silently by me, for a considerable time. At other times, he would confidently come and settle upon my shoulder, and there solicit my favour and pardon, with soothing expressions, and caressing gesticulations ; not omitting to tickle me about the neck, ears, &c. ^{etc.}

Tom appeared to be influenced by a lively sense of domination (an attribute prevalent in the animal creation) : but, nevertheless, his ambition, in this respect, seemed to be moderated by a degree of reason, or reflection. He was, certainly, by no means tyrannical, or cruel. It must be confessed, however, that he aimed to be master of every animal around him, in order to secure his independence and his self-pre-

servation, and for the acquisition and defence of his natural rights. Yet, in general, he was peaceable and social with all the animals about him.

He was the most troublesome and teasing to a large dog, whom he could never conquer. This old dog, from natural fidelity, and a particular attachment, commonly lay down near me, when I was at rest, reading or writing under the shade of a pear-tree, in the garden, near the house. Tom (I believe from a passion of jealousy) would approach me, with his usual caresses, and flattery, and after securing my notice and regard, he would address the dog in some degree of complaisance, and by words and actions ; and, if he could obtain access to him, would tickle him with his bill, jump upon him, and compose himself, for a little while. It was evident, however, that this seeming sociability was mere artifice to gain an opportunity to practise some mischievous trick ; for no sooner did he observe the old dog to be dozing, than he would be sure to pinch his lips, and pluck his beard. At length, however, these bold and hazardous achievements had nearly cost him his life : for, one time, the dog being highly provoked, he made so sudden and fierce a snap, that the crow narrowly escaped with his head. After this, Tom was wary, and used every caution and deliberation in his approaches, examining the dog's eyes and movements, to be sure that he was really asleep, and at last would not venture nearer than his tail, and then by slow, silent, and wary steps, in a sideways, or oblique manner, spreading his legs, and reaching

forward. In this position, he would pluck the long hairs of the dog's tail. But he would always take care to place his feet in such a manner as to be ready to start off, when the dog was roused and snapped at him.

It would be endless (observes my ingenious friend, in the conclusion of his entertaining account of the crow) to recount instances of this bird's understanding, cunning, and operations, which, certainly, exhibited incontestible demonstrations of a regular combination of ideas, premeditation, reflection, and contrivance, which influenced his operations.

XXVI. *Extracts from a MS. Journal* of the late Mr. JAMES BOYD, of Lancaster, in Pennsylvania.*

CLARKSVILLE is situated on the N. W. side of the River Ohio. It contains about twenty-five cabins. (See Note 1, at the end of this paper.) Here I staid all night.

One of the inhabitants (of Clarksville) caught a Cat-fish, which weighed 115 pounds. I saw no other part of it but the head, which we weighed, and found it to be 40 pounds. It was eleven inches and a half

* This Journal was communicated to me in the year 1786, and the journey to which it relates was performed the preceding year.
EDITOR.

between the eyes; the mouth fifteen inches wide. I put my dog into the fish's mouth, and pulled him through its head. The dog weighed exactly 41 pounds. There were not less than a dozen gentlemen present, when this was done. (See Note 2.) *Pages 1 and 2.*

I am told that the wind generally blows up the Mississippi. *Page 8.*

This morning we had like to have run foul of a *Sawyer*. These are old trees which lie in the river fast at the roots, and from the manner of their tops rocking up and down, they are called Sawyers. They are deemed very dangerous. The current runs so amazingly swift, that should a boat run on one of them, it would injure her much, if not stave her. *Pages 8 and 9.*

June 13th. We have seen, for some days, that we could not get as much dry land, as to put to shore. The country is overflowed for many miles. *Pages 14 and 15.*

July 4th and 5th. In some places, the country is overflowed for forty or fifty miles. The river (Mississippi) was so full as we came down, that, in many places, the water was three and four feet higher than the banks. At such places, we had hard work to keep our boat from running into the woods. *Pages 26 and 27.*

The general reports about the waters of the Mississippi being a cure for the itch, I believe to be true. Most of our men had the disease, when we started, and by the time we arrived here (Panmure), they were all well. The water is muddy, but is pleasant to drink, and is thought very wholesome.

Page 27.

October 30th. I could not help taking notice of the artificial mounts, which we saw on our way. There are numbers of them throughout this country. It is unknown, either by the Indians or the white inhabitants, by whom they were constructed; but it is certain that they must be of a long standing. On some of them there are growing trees, more than two feet over. Mr. Smith lives upon one, which is not less than 35 feet in perpendicular height, about 150 feet long, and 100 feet broad. They are of different forms: some are square; some long-square; some eight-sided, and some round. There cannot be better situations for houses than they make. (See Note 3.)

Pages 34 and 35.

The Chactaw towns are in no kind of regular form. Every family has two houses, one for winter, and the other for summer. The Hot-Houses are built with stakes stuck up and filled in with mud. They are, in general, round, and plastered all over with clay so close, that no air can enter, except at the door, which is but small. The outside looks very neat. In the centre of each of these houses, they have a small fire, around which they huddle in cold weather. The

summer houses are built in form of our sheds. *Pages 45 and 46.*

The Chactaws are the most civil set of Indians I have yet seen. They treated us with much more humanity than the —, who pretend to be a Christian people. They are, however, dirty, poor, and very lazy: but they are very brave in war. Their manner of dress is quite different from that of the Northern Indians.

When the Chactaws dispose of their dead, they wrap the body in a blanket, and lay it upon a scaffold, which is placed before the door of the deceased. Here it must lie, until the flesh is rotten sufficiently to be easily scraped from the bones. By the scaffold there are placed several poles, painted red, round which the friends mourn. They stand by these poles, and cry, three or four times a day, over the dead body. The greater the person has been, the longer the mourning is continued.

After the flesh is sufficiently rotted, they send for the "Bone-pickers," who are persons expressly appointed for this purpose. They scrape, with their nails, the flesh very clean from the bones. These are put into a box, which is deposited in a house, that is built for keeping the bones of the dead. In every town, there is one of these houses. (See Note 4.)

Once a year, there is a general mourning. On this day, the Indians collect, and cry over the bodies

of their deceased friends. After this ceremony has been performed, they feast upon the best the country affords.

It is a custom among them, as they pass from one town to another, when they see these "mourning-poles," to stop and cry an hour or two.

November 9th—30th. The Mississippi is not less than 40 feet (perpendicular) lower than when we came down in June last. *Page 36.*

N. B. Further extracts from this Journal will be given in our next number.

NOTES ON THE PRECEDING PAPER, BY THE
EDITOR.

Note 1. *Page 95.* In 1791, it contained about sixty inhabitants. It is situated "opposite Louisville, a mile below the Rapids, and 100 miles S. E. of Post Vincent. It is frequently flooded, when the river is high, and inhabited by people who cannot, at present (about 1797), find a better situation."—*Morse.*

Note 2. *Page 96.* The Ohio contains several species of Cat-fish, which belong to the genus *Silurus*. The species have not been examined with sufficient attention. Two species are particularly desig-

nated by the Indians. One of these is the *Wi-sa-meek*, or “Fat-Fish,” of the Delaware-Indians. This seldom exceeds ten pounds in weight. The other is the *Wal-heu*, or “Deep-water-Fish,” of the same Indians. The large fish mentioned by Mr. Boyd seems to belong to this species. It is of a much darker colour than the other, and is often called, by the white inhabitants, the “Black Cat-fish,” to distinguish it from the other, which is called “White Cat-fish.” In another part of his journal, Mr. Boyd mentions a cat-fish (caught in the Mississippi), which, he says, “would have weighed at least 100 pounds.” I have good authority for asserting, that one weighing 144 pounds was caught in the Ohio, about sixteen or eighteen years ago.

Note 3. Page 97. The preceding observations concerning the mounts were made by Mr. Boyd, during a little excursion which he took from Fort-Panmure (now Natchez) into the country. Similar edifices are mentioned by other persons. Speaking of the Indians, Adair says, “Through the whole continent, and in the remotest woods, are traces of their ancient warlike disposition. We frequently met with great mounds of earth, either of a circular or oblong form, having a strong breast-work at a distance around them, made of the clay which had been dug up in forming the ditch, on the inner side of the enclosed ground, and these were their forts of security against an enemy. Three or four of them are, in some places, raised so near to each other, as evidently for the garrison to take any enemy that passed

between them. They were mostly built in low lands; and some are overspread with large trees, beyond the reach of Indian tradition. About 12 miles from the upper northern parts of the Choktah country, there stand on a level tract of land, the north side of a creek, and within arrow-shot of it, two long mounds of earth, which were old garrisons, in an equal direction with each other, and about two arrow-shots apart. A broad deep ditch inclosed those two fortresses, and there they raised an high breast-work, to secure their houses from the invading enemy. This was a stupendous piece of work, for so small a number of savages as could support themselves in it; their working instruments being only of stone and wood. They called those old fortresses *Nanne Tah*, "the hills or mounts of God."—*The History of the American Indians, &c. &c.* By James Adair, Esquire. Pages 377, 378. London: 1775. It is highly probable, that the mounts mentioned by Mr. Boyd, are some of those to which Adair alludes.

Note 4. Page 98. This fact cannot but be interesting to the historian of the science of Anatomy. Some progress must necessarily have been made in a knowledge of the structure of the human body, particularly of the bony fabric, by a people who had adopted, and rigidly pursued, for a long series of years, a practice such as Mr. Boyd has described. When, moreover, it is recollectcd, that it was the custom among some of the tribes to carry with them, for years, the bones of their friends, which they occasionally anointed with the fat of bears, or other ani-

mals, it seems highly probable, that they must have attained to a considerable knowledge of the osteology of the human body; more correct, perhaps, than is to be discovered among other savage nations. It would, certainly, be an object of curiosity to inquire into the Indian nomenclature of the parts of the human body.

XXVII. *On the Digestive Power of the Pike (Esox).*

In a letter to the EDITOR, from Mr. ANDREW ELLICOTT, now of Lancaster, in Pennsylvania.

AS a proof of the strong digestive power of Fish, please to accept of the following fact.

In the month of September, last year, a Pike of about twenty pounds in weight, was taken in the Small Lake, near Le Boeuf. It was brought into the fort, and opened; and, to our surprise, the stomach contained all the bones of a squirrel's head, retaining their positions with respect to each other, but reduced to the state of a very soft cartilage. Even the teeth, so remarkable for hardness in this animal, were in the same state. They had lost their brown colour, and were perfectly white.

Philadelphia, November 30th,
1795.

NOTE.

There are various ways in which it may be supposed, that a pike, or other fish, may have gotten possession of a squirrel. The most probable appears to be this. The squirrels, of different species, perform annual migrations, in immense numbers, across the creeks, rivers, and other waters of North-America. It can hardly be doubted, that, while performing these voyages, some of the animals fall victims to the ravenous appetites of fish.

Editor.

XXVIII. *Directions for the management of Silk-Worms. By the late Mrs. S. WRIGHT, of Lancaster-County, in Pennsylvania**.

LAY the sheets of eggs in folds of dry ironed linen, in a drawer, in a room where but little fire is

* It is not supposed, that this paper contains much information that is entirely new to those who have directed their attention to the subject to which it relates. But, as it may be useful, it is here presented to the public. The author was a woman of uncommon powers of mind, and directed much of her attention to the management of silk-worms, and to other subjects of public utility, at a time (at least forty years ago) when she stood alone in her exertions in this way. It is to be observed, that the silk-worm upon which Mrs. Wright made her experiments, was the foreign worm; and not any of the native species of North-America. These Directions are printed from a MS. account, which was found among the papers of the Editor's Father, the Reverend Mr. Thomas Barton, of Lancaster.

kept. As soon as the mulberry-buds begin to open into leaves in the spring, we should bring the sheets of eggs into a warm room, and lay them in a south window, where the sun may shine through the glass upon them. We may, perhaps, do this several days before they begin to hatch; but, notwithstanding this, when we lay them by, we should not return them into a cool room.

As soon as the worms appear, pick the small mulberry leaves from the tree, and lay them, with the under sides downwards, upon the sheets of eggs, in those places particularly where they have already hatched; and the worms will immediately begin to eat. As the leaves fill with the worms, take them up carefully, and lay them on a sheet of clean paper, which should be perfectly dry, and apply fresh leaves. The greater part of those worms, which hatch in a day, come out before evening; and we should be cautious to keep the hatchings of every day upon separate papers, that they may be prevented from intermixing with each other; and, indeed, during the whole time of their feeding, we should strictly adhere to this caution; for as the worms moult at certain periods from the time of their hatching, the sick among them would be liable to communicate the infection to the others, and thus create infinite trouble.

Whenever we intend to clean them, we should, as before, lay fresh leaves over them, and when they have pretty generally come upon them; remove the leaves upon clean sheets of paper, and brush and dry

the other sheets for the next remove: it sometimes happens, that a few of the worms do not come upon the leaves; these should be taken up with a large needle.

The silk-worm casts its skin four times during the time of feeding; and at the first moulting, which is a week, or perhaps longer, from its hatching, is very small. Previous to this, the worms lie in a manner torpid, with their heads erect, and are averse from food; but, perhaps, a few of them, not so forward as the rest, may require food longer, and therefore here and there we may lay a few leaves for them; but at these times we should take care not to meddle with them at all, for when they moult they do it best by their skins sticking among their litter, by which means they creep out of them with more ease, and we should observe this through all their four moultings. After this, they eat more voraciously than before, and the better they are fed, the sooner they will spin, and make the richer cocoons; but we ought to be particularly careful when we give them the leaves, that they be free from moisture of every kind, and we should secure them from cats, rats, mice, and ants; a smaller species of this last, which is very common in Pennsylvania, is peculiarly destructive to the silk-worm.

If our worms have been accustomed to a room warmed by either a chimney or stove, and a cool rainy season should come on, it would be proper to warm the room moderately in such weather; otherwise they will be liable to droop and grow languid.

When they are ready to spin, they look clear, and their skins shine ; they leave their food, and begin to ramble in search of convenient places, which should be ready prepared for them. A variety of contrivances may be found for this purpose. None are more neat than paper cones; but as it is not practicable to make use of these for any very considerable number of worms, without some expence and trouble, we may procure old trunks or boxes, which we should stick full of small bushes, stript of their leaves, and so disposed that the worms can conveniently fix their threads to them. Sometimes, however, they are inclined to ramble about, and waste their silk : in this case, it will be necessary to secure them in paper cones.

In a week and one day after the worms have certainly begun to spin, we may take them down, and strip off the refuse silk, that is, such as is loose upon the cocoons, and also what we find among the bushes, &c. Whatever quantity of cocoons we mean to preserve for *seed*, should be strung upon long threads, and suspended, with papers behind them, over a table, or laid upon sheets of paper upon a table, upon which the worms will come out, and lay their eggs.

It will be proper to preserve an equal number of the round and long cocoons, as it is said these different shaped cones are each the produce of the two sexes. Such of the cones as are kept for winding, should be laid in sieves covered closely with thick cloths, and placed over kettles of boiling water, in

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TABLE

Of the Greatest, Least, and Mean State of the Thermometer, Barometer, and Hygrometer,
with other Observations.

1793.	Thermometer (Fahrenheit.)	Barometer.			Hygrometer (dry.)			Prevailing Winds. No. days each.			Cloudy Days. No.			Clear Days. No.			Days Thunder. No.		
		Greatest	Least	Mean	Greatest	Least	Mean	N. E.	N. W.	S. W.	No.	Days Rain. No.	Days Hazy. No.	Days Snow. No.	Days Thunder. No.				
Jan.	48	12	28	30,44	30,15	30,30	10	2	6	2	14	6	19	12	3	3	1	—	—
Feb.	48	0	29	30,46	30,15	30,31	11	10	4	3	11	7	13	15	7	5	1	—	—
March	68	10	40	30,30	30,—	30,15	14	10	4	15	9	3	20	11	7	2	3	—	—
April	74	34	51	30,20	29,75	29,97	16	9	9	7	6	11	16	14	10	—	4	—	—
May	86	42	62	*29,74	29,15	29,46	18	10	5	10	2	10	15	16	13	—	6	3	—
June	88	46	67	29,40	28,70	29,18	7	22	4	14	4	1	20	10	12	—	1	5	—
July	86	56	71	29,30	28,90	29,14	11	19	2	11	8	6	23	8	12	—	4	5	—
August	84	54	70	29,45	28,96	29,22	8	19	1	17	2	9	24	7	7	—	3	3	—
Sept.	80	36	63	29,60	29,—	29,27	10	10	2	8	9	6	20	10	6	—	2	—	—
Oct.	76	24	50	29,90	28,90	29,37	14	2	10	13	7	1	21	10	6	—	5	—	—
Nov.	64	20	39	29,75	28,76	29,33	10	26	1	9	6	9	19	11	10	2	—	—	—
Dec.	40	4	27	29,45	28,70	29,18	7	4	3	15	6	3	21	11	5	7	—	—	—
Whole year	88	0	50	29,90	28,70	29,27	18	26	3	124	84	72	230	135	98	19	30	16	—

* In this month the barometer was altered.

[To face page 107.]

order that the steam may penetrate the balls, and thus destroy the worms; or they may be placed in vessels in ovens after the bread is taken out. The former of these methods is, however, the best, as the steam is not so liable to harden the gum, as the application of heat in a dry form. Those balls, where two worms have spun together, will not wind: these should be cut open and boiled, with the refuse silk above-mentioned, in soap and water, until they open, and become as soft as cotton; it may then be spun out of the hand upon a wheel, but can never be carded.

XXIX. *Meteorological Observations made at Nazareth,
in Pennsylvania, for the year 1793.*

THE table on the opposite page is the result, for the year 1793, of the meteorological observations made at Nazareth, in Pennsylvania, by the Reverend Charles Gotthold Reichel.

They are taken daily, about sunrise, and between two and three o'clock in the afternoon.

The *mean* degrees on the thermometer, barometer, and hygrometer, are determined, by adding together the observations taken in each month, and dividing the total by twice the number of days. The *means* for the whole year are found, by dividing the amount of the means for each month by twelve.

Nazareth, it is believed, is the only place in the state of Pennsylvania, besides the capital, where regular meteorological observations are made; at least, they are not made public. These have this year been more than usually interesting, on account of the malignant and pestilential fevers which have raged in many parts, and proved mortal to thousands. It is well known, that last summer about 4,500 persons died in and near Philadelphia, in a period of time which in former years, never took off more than 500 persons. Whatever may have been (under God) the immediate cause or causes of this heavy mortality, it is generally believed that the uncommon state of the atmosphere, both before and during that time, contributed much thereto. The following remarks occur on inspection of Mr. Reichel's tables for this year, and on comparing them with former ones.

1. The winter of 1792-3 was a very mild one.
2. An unusual quantity of rain fell in the spring of 1793.
3. The rainy weather was followed by intense heats. The mercury in the thermometer was, during the months of June, July, and August, seldom below 70°; and for several weeks successively, it was every day above 80°.
4. The observations on the hygrometer show that the air, during the months of June and July, was often excessively moist, and at no time very dry.

5. The north-west wind is allowed to be the most healthy that blows over this continent. Some years it is by far the most prevalent. This year the wind came in all

124 days from the south-west,
84 days from the north-west, and
72 days from the north-east.

It is the opinion of many persons, that the yellow-fever, if not imported, is always the offspring of vegetable putrefaction, in or near the district of country where it breaks out. A rainy season, followed by a long drought, and *hot* weather, causes such putrefaction; and has, therefore, in every climate, been productive of diseases; unless the heat was so intense, or of such long duration, as wholly to dissipate moisture; or, the country was so circumstanced as immediately to drain itself. None of these exceptions apply to Pennsylvania, where the climate is upon the whole temperate, and the soil in many parts but little drained and improved. Yet the heat is here at times as great as in the West-Indies; and, in the opinion of respectable writers, our summers are sometimes equally capable of generating contagious fevers, though their progress, they say, may, by the use of proper means, be easily stopped. During the nine years Mr. Reichel has spent in Nazareth, there never has been so much rain in the spring and early part of the summer, as last season; nor was the heat in former years so uninterrupted and oppressive to the human frame, as that which succeeded in the months of June, July, August, and September.

XXX. *On the medical virtues of the Orobanche Virginiana, or Cancer-Root, in Cancerous and other Ulcers. In a letter to the EDITOR, from Dr. GEORGE BENSELL, of Germantown, Pennsylvania.*

IN the year 1788, a friend of mine, who had found the benefit of this root (in Kentucky), in the cure of an old and painful ulcer of the leg, gave me a small quantity of the powder. I applied it to a confirmed cancer, situated in the face, which it completely cured.

Having discovered, in my neighbourhood, the same plant, which attaches to itself the remarkable peculiarity of growing under no tree of the forest but the Water-Beech, I have, upon various occasions, used the powdered root of it in foul and cancerous ulcers, frequently with success, and generally to the great relief of the patient.

It is difficult to say, in what manner this vegetable acts, unless, indeed, by certain qualities it possesses of neutralizing the cancerous virus; for in no instance have I found it to excite the smallest degree of pain.

The powder should be mixed with a solution of gum-arabic, thickened to the consistence of ointment, and laid on thin leather, which may be left upon the ulcer as long as any adhesive quality remains. This,

in proportion to the discharge, will sometimes last two or three days*.

Germantown, November 5th,

1804.

* For some observations concerning the properties of this vegetable, see *Collections for an Essay towards a Materia Medica of the United-States*. Part Second, pages 6—10. Since the publication of the work just referred to, I have been informed, that a decoction of the Orobanche has been found useful in cases of cholic. But on this subject, I have not received any precise information.

EDITOR.

THE

PHILADELPHIA

MEDICAL AND PHYSICAL JOURNAL.

SECTION SECOND.

P



BIOGRAPHY.

Some account of the late Mr. JOHN BARTRAM, of Pennsylvania. By WILLIAM BARTRAM.

RICHARD BARTRAM, the grandfather of the subject of this sketch, came from England to America with the adherents of the famous William Penn, proprietor of Pennsylvania, towards the close of the seventeenth century. He settled a plantation in the township of Marpole, and county of Chester, at the distance of twelve miles from Philadelphia.

From Richard descended two sons, John and Isaac. The former inherited the paternal estate in Marpole, and the latter settled upon another plantation in Darby, at a few miles distance. John, the elder, had two sons by his first marriage, namely, James and John, early in the beginning of the eighteenth century; and by his second marriage, a son and a daughter, named William and Elizabeth. Soon after his second marriage, he removed to North-Carolina, where he settled a plantation at a place called Whitoc, and there, with the greatest part of the settlement, fell a victim to the rage of the Whitoc-Indians. The widow and

her two children* were carried away captives by the Indians, but were afterwards redeemed, and returned to Pennsylvania.

John, the celebrated botanist and naturalist, inherited the estate in Darby, which was left to him by his uncle Isaac. Being born in a newly-settled colony†, of not more than fifty years' establishment, in a country where the sciences of the old continent were little known, it cannot be supposed, that he could derive great advantages or assistance from school-learning or literature. He had, however, all or most of the education that could, at that time, be acquired in country-schools; and whenever an opportunity offered, he studied such of the Latin and Greek grammars and classics, as his circumstances enabled him to purchase. And he always sought the society of the most learned and virtuous men.

He had a very early inclination to the study of physic and surgery. He even acquired so much knowledge in the practice of the latter science, as to

* William and Elizabeth.

† My learned friend Dr. James Edward Smith, seems to speak of Mr. Bartram as an Englishman. "Bartram (he says) was sent to America for the purpose of supplying our gardens with plants; and we are much indebted to him, as well as to Houstoun, who discovered many rare vegetables in South-America and the West-Indies," &c. *Discourse on the Rise and Progress of Natural History*, &c. See *Tracts relating to Natural History*, p. 123. London: 1798. But Bartram was a native of Pennsylvania, and never visited any part of the old world. EDITOR.

be very useful ; and, in many instances, he gave great relief to his poor neighbours, who were unable to apply for medicines and assistance to the physicians of the city (Philadelphia). It is extremely probable, that, as most of his medicines were derived from the vegetable kingdom, this circumstance might point out to him the necessity of, and excite a desire for, the study of Botany*.

He seemed to have been designed for the study and contemplation of Nature, and the culture of philosophy. Although he was bred a farmer or husbandman, as a means of procuring a subsistence, he pursued his avocations as a philosopher, being ever attentive to the works and operations of Nature. While engaged in ploughing his fields, and mowing his meadows, his inquisitive eye and mind were frequently exercised in the contemplation of vegetables ; the beauty and harmony displayed in their mechanism ; the admirable order of system, which the great Author of the universe has established throughout their various tribes, and the equally wonderful powers of their generation†, the progress of their growth, and the various stages of their maturity and perfection.

* Dr. Haller speaks of Mr. Bartram as a physician : " Johannes Bartram, Medicus Americanus." *Bibliotheca Anatomica.* Tom. II. p. 323.

† At an early period, but not, I believe, until after James Logan had made his celebrated experiments upon the generation of the *Zea Mays*, of Indian-corn, Mr. Bartram had made some experiments relative to the generation of the *Lychnis dioica* (Red-Campion, and White-Campion), a vegetable which has since so-

He was, perhaps, the first Anglo-American, who conceived the idea of establishing a BOTANIC GARDEN, for the reception and cultivation of the various vegetables, natives of the country, as well as of exotics, and of travelling for the discovery and acquisition of them. He purchased a convenient piece of ground, on the banks of the Schuylkill, at the distance of about three miles from Philadelphia; a happy situation, possessing every soil and exposure, adapted to the various nature of vegetables. Here he built, with his own hands, a large and comfortable house, of hewn stone, and laid out a garden containing about five acres of ground.

He began his travels at his own expence. His various excursions rewarded his labours with the possession of a great variety of new, beautiful, and useful trees, shrubs, and herbaceous plants. His garden, at length, attracting the visits and notice of many virtuous and ingenious persons, he was encouraged to persist in his labours.

Not yet content with having thus begun the establishment of this school of science and philosophy, in the blooming fields of FLORA, he sought farther means for its perfection and importance, by commu-

licited the attention of other botanists or naturalists, among whom I may mention Dr. John Hope, Dr. Daniel Rutherford, and Mr. William Smellie. Mr. Bartram's experiments were highly favourable to the truth of the doctrine of the sexes of vegetables. EDITOR.

nicating his discoveries and collections to the curious in Europe and elsewhere, for the benefit of science, commerce, and the useful arts.

Having arranged his various collections and observations in natural history, one of his particular friends* undertook to convey them to the celebrated Peter Collinson, of London. This laid the foundation of that friendship, and correspondence, which continued uninterrupted, and even increasing, for near fifty years of the lives of these two eminent men. Collinson, ever the disinterested friend, communicated, from time to time, to the learned in Europe, the discoveries and observations of Bartram. It was principally through the interest of Collinson, that he became acquainted, and entered into a correspondence, with many of the most celebrated literary characters in Europe†, and was elected a member of the Royal Society of London, of that of Stockholm, &c.

* Joseph Brentnial, Merchant, of Philadelphia.

† It is believed, that there have been but two or three native Americans whose correspondence with the learned men of Europe was so extensive as that of Mr. Bartram. The mere catalogue of his correspondents would fill a page. A few of the principal ones are mentioned: Linnæus, Gronovius, Dalibard, Sir Hans Sloane, Catesby, Dillenius, Collinson, Fothergill, George Edwards, Philip Miller, and Targioni. He likewise lived in habits of intimacy and friendship, or corresponded, with most of the distinguished literary characters at that time in North-America, among whom I may mention Dr. Franklin, Dr. Garden, Mr. Clayton, and Governor Colden. His large collection of letters to these, and many other, celebrated men, is in the possession of the Editor. Extracts from some of them have already been printed

He employed much of his time in travelling through the different provinces of North-America, at that time subject to England. Neither dangers nor difficulties impeded or confined his researches after objects in natural history. The summits of our highest mountains were ascended and explored by him. The lakes Ontario, Iriquois, and George; the shores and sources of the rivers Hudson, Delaware, Schuylkill, Susquehanna, Allegeny, and St. Juan were visited by him, at an early period, when it was truly a perilous undertaking to travel in the territories, or even on the frontiers, of the aborigines.

He travelled several thousand miles in Carolina and Florida. At the advanced age of near seventy years, embarking on board of a vessel at Philadelphia, he sat sail for Charleston, in South-Carolina. From thence he proceeded, by land, through part of Carolina and Georgia, to St. Augustine, in East-Florida. When arrived at the last-mentioned place, being then appointed botanist and naturalist for the King of England, for exploring the provinces, he received his orders to search for the sources of the great River St. Juan.

in the present number of the Journal, and many more will be given in subsequent numbers. It is much to be regretted, that many of the letters are so injured by the ravages of time, that they cannot, in many places, be read at all; or at least, only with extreme difficulty. Parts of some of them are irrecoverably lost.
EDITOR.

Leaving St. Augustine, he travelled, by land, to the banks of the river, and, embarking in a boat at Picolata, ascended that great and beautiful river (near 400 miles), to its sources, attending carefully to its various branches, and the lakes connected with it. Having ascended on one side of the river, he descended by the other side, until the confluence of the Picolata with the sea.

In the course of this voyage or journey, he made an accurate draught and survey of the various widths, depths, courses, and distances, both of the main stream, and of the lakes and branches. He also noted the situation and quality of the soil, the vegetable and animal productions, together with other interesting observations, all of which were highly approved of by the Governor, and sent to the Board of Trade and Plantations, in England, by whose direction they were ordered to be published, for the benefit of the new colony.

Mr. Bartram was a man of modest and gentle manners, frank, cheerful, and of great good-nature; a lover of justice, truth, and charity. He was himself an example of filial, conjugal, and parental affection. His humanity, gentleness, and compassion were manifested upon all occasions, and were even extended to the animal creation. He was never known to have been at enmity with any man. During the whole course of his life, there was not a single instance of his engaging in a litigious contest with any of his neighbours, or others. He zealously testified

against slavery ; and, that his philanthropic precepts, on this subject, might have their due weight and force, he gave liberty to a most valuable male slave, then in the prime of his life, who had been bred up in the family almost from his infancy*.

He was, through life, a striking example of temperance, especially in the use of vinous and spirituous liquors : not from a passion of parsimony, but from a principle of morality. His common drink was pure water, small-beer, or cyder mixed with milk. Nevertheless, he always kept a good and plentiful table. Once a year, commonly on new year's day, he made a liberal entertainment for his relations, and particular friends.

His stature was rather above the middle size, and upright. His visage was long, and his countenance expressive of a degree of dignity, with a happy mixture of animation and sensibility.

He was naturally industrious and active, both in body and mind ; observing, that he never could find more time than he could employ to satisfaction and advantage, either in improving conversation, or in some healthy and useful bodily exercise : and he was astonished to hear men complaining, that they were

* Mr. Bartram was, certainly, one of the earliest espousers of the cause of the Blacks, in Pennsylvania. In point of time, however, he must yield the precedence to some other persons, particularly to Benjamin Lay, of whom it is to be regretted, that so few written memorials are preserved. EDITOR.

weary of their time, and knew not what they should do.

He was born and educated in the sect called Quakers. But his religious creed may, perhaps, be best collected from a pious distich, engraven by his own hand, in very conspicuous characters, upon a stone placed over the front window of the apartment, which was destined for study and philosophical retirement.

'Tis God alone, Almighty Lord,
[The Holy One by me ador'd.] J. B.

1770.

This may show the simplicity and sincerity of his heart, which never harboured, or gave countenance to, dissimulation*. His mind was frequently employed, and he enjoyed the highest pleasure, in the contemplation of Nature, as exhibited in the great volume of Creation. He generally concluded the narratives of his journeys with pious and philosophical reflections upon the Majesty and Power, the Perfection and the Beneficence, of the Creator.

He had a high veneration for the moral and religious precepts of the Scriptures, both old and new. He read them often, particularly on the sabbath-day; and recommended to his children and family the following precept, as comprehending the great principles of moral duty in man:

* The distich, however, gave offence to many of Mr. Bartram's friends. EDITOR.

"Do Justice, love Mercy, and Walk Humbly before God."

He never coveted old age, and often observed to his children and friends, that he sincerely desired, that he might not live longer than he could afford assistance to himself: for he was unwilling to be a burthen to his friends, or useless in society; and that when death came to perform his office, there might not be much delay. His wishes, in these respects, were gratified in a remarkable manner: for although he lived to be about eighty years of age*, yet he was cheerful and active to almost the last hours. His illness was very short. About half an hour before he expired, he seemed, though but for a few moments, to be in considerable agony, and pronounced these words, "I want to die."

N. B. A Supplement to this sketch, containing some account of Mr. Bartram's writings, and an estimate of his services as a discoverer and collector of natural objects, will be printed in a subsequent number of this Journal.

* He was born about the year 1700, and died in the year 1778.
EDITOR.

OBITUARY.

DR. GEORGE PFEIFFER, a respectable young physician, died in Philadelphia, in the month of August last. He received the degree of Doctor of Medicine in the College of Philadelphia, in the year 1791, on which occasion he defended an ingenious inaugural dissertation, "On the Gout."

Accounts have just been received of the death of Dr. Thomas Percival, of Manchester, in England. This gentleman practised physic, for many years, with much reputation, and is well known as the author of a great number of tracts and works, relating to medicine and other sciences, and also to polite literature. He was a man of learning and judgment, and in private life extremely amiable and benevolent.

Of the celebrated Dr. Joseph Priestley, who died at Northumberland, in Pennsylvania, on the 6th of February last, several interesting biographical sketches have already been published, particularly by the very respectable Dr. John Aiken, Mr. Belsham, and Mr. Toulmin, all of England. It will hardly be doubted, that a character so distinguished for his learning, his discoveries, and his virtues, as Dr. Priestley was, will command the attention of many other writers. THE

AMERICAN PHILOSOPHICAL SOCIETY, of which the Doctor was a member, have appointed one of their members to prepare and pronounce, in public, a tribute to his memory. This will be done either in the course of the present month, or very early in December.

THE
PHILADELPHIA
MEDICAL AND PHYSICAL JOURNAL.

SECTION THIRD.

MISCELLANEOUS

FACTS AND OBSERVATIONS.

1. THE Indians here (at Onondaga, in the State of New-York) decrease. Three years ago, there were 133, and last spring, when they received their money, there were but 105. They almost all die of phthisis pulmonalis. They have had within this year two pair of twins, something uncommon. It is sixteen or seventeen years since twins were born among them before.

MR. JAMES GEDDES,
of Onondaga. November 16th, 1798.

2. Last summer, when I was near the settlement of the Oneida-Indians (in the state of New-York), the dysentery prevailed much, and carried off some of the white inhabitants, who applied to the Indians for a remedy. They directed them to drink a decoction of the roots of Blackberry-bushes*, which they did,

* *Rubus occidentalis.* EDITOR.

after which not one died. All who used it, agreed, that it is a safe, sure, and speedy cure.

MR. JAMES V. A. ANDERSON.

August 4th, 1804.

3. About the year 1785, the Scarlet-Fever, with sore-throat, appeared among the children at Detroit, and swept off, in this little place, upwards of sixty children, and even a few grown persons, in the term of a few weeks. Our Indian congregation, then living in the neighbourhood, though they frequently visited this place, never took the disorder. A person at Detroit then remarked to me, that this disease did not affect the children of the French-Canadians as much as it did those of the Europeans. However, a disorder called the Hooping-Cough, attended, at length, with a sore-throat, I have known to prove destructive to the Indian children, in their settlements.

MR. JOHN HECKEWELDER.

February 11th, 1797.

4. The Itch, I believe, is not common among the Indians; at least, I do not recollect of seeing one instance of an Indian that had it. I have wondered at this, and have ascribed it to their different mode of living; namely, their food, their well-aired houses, or huts, &c.

Ibid.

5. The people in the neighbourhood of the Genesee-River are very sickly this season. Their disorder is called the Genessee-Fever, and has proved fatal to many. Its malignancy is, perhaps, owing to the continual rains we have had here, for more than two months, during which time scarcely a day was passed without rain,

Mr. JAMES W. STEVENS.

September 17th, 1801.

6. In 1794, Dr. Appleton, of Boston, informed me, that in the summer of 1778, a genuine Typhus carcerum, or Goal-Fever, was generated in the goal, among the prisoners, in Nova-Scotia. A cartel being to be made between these prisoners and the British, numbers of the former, labouring under typhus, were accordingly sent into Narraganset-Bay. Here they were landed upon Hospital-Island, where the Doctor saw many of them;

The number of sick and dead was very great. It was observed (he said), that almost every person who landed upon the island, whether he had or had not immediate contact with the persons labouring under the disease, or with their clothes, was seized with the disorder.

Numbers of the nurses, physicians, and others, returned to Boston, with the disease upon them: but

it was remarkable, that “in not one instance,” did these communicate the disease to others “in the town.” He thought there was some reason to believe, that one or two persons received the disease, in Boston, from washing the clothes of the sick.

While the typhus raged in Hospital-Island, there were some persons ill of the same disease in the hospital in Boston. These (it is said) *did* communicate the disease to their nurses, &c.

The disease prevailed at Hospital-Island, and in Boston, especially in the month of October.

EDITOR'S MS. *Medical Journal,*
for 1794.

7. The Cheerake-Indians are subject to intermit-tent fevers, which (it is said) they cure by means of certain roots. They are also subject to a disease called by the white traders “the head-Pleurisy.” It is thought to be contagious. In the course of a sin-gle week, in the summer of 1779, it carried off 350 of these Indians. Some of the sick died after an ill-ness of less than twenty-four hours. The practice of sweating was thought to be one cause of the exces-sive mortality of the disease. The disease is very common along the low-grounds of the River Tennes-see, and near stagnant waters.

The disease of gout is not unknown among the
Cheerake-Indians.

*The EDITOR's MS. Journal,
for the year 1794.*

8. The Moravians had been settled for some time at the Upper-Moravian town, upon the river Muskingum (a branch of the Ohio), and had enjoyed a great share of health there. The missionary's house was situated near a pond of water, between which and the house there were some trees. The pond having been mistaken for a spring (whereas it was evidently found to rise and fall with the river), the trees were cut down; after which the place became extremely unhealthy, the inhabitants being subject to intermittents.

*EDITOR'S MS. Journal,
for 1793.*

9. Dr. John Abraham De Normandie informed the Editor (in 1789), that he did not think that the "Nervous Fever" was known in the middle states, viz. New-York, New-Jersey, Pennsylvania, and the Lower Counties (Delaware), before the year 1735. Dr. Cadwalader and Dr. Phineas Bond (he said) had made the same remark.

More precise information, concerning this interesting question, will be gladly received by the Editor.

MS. Medical Journal,
for 1789.

10. An intelligent physician, and who has inoculated a great number of negroes in North-Carolina, informs the Editor, that he has remarked, that very generally the eruption makes its appearance, in this variety of men, forty-eight hours earlier than it does in the whites, and that the fever is proportionably early. To this rule, he thinks, there is not more than one exception in fifteen cases. He is also persuaded, that the negroes have the small-pox milder than whites, which he ascribes to the greater perspiration of the former.

MS. Medical Journal,
for 1794.

11. The following passage from Ligon's *History of Barbadoes*, seems not to have been generally noticed by the writers on the malignant fevers of the West-Indies. It is printed, in this place, because the original work is extremely rare in the United-States.

Ligon sailed from the Downs, in June, 1647, and arrived in Barbadoes the same year. We "put (he says) into *Carlisle Bay*; which is the best in the

Island, where we found riding at anchor, 22 good ships, with boats plying to and fro, with sails and oars, which carried commodities from place to place: so quick stirring, and numerous, as I have seen it below the bridge at *London*.

“ Yet (he continues) notwithstanding all this appearance of trade, the Inhabitants of the Islands, and shipping too, were so grievously visited with the plague, (or as killing a disease,) that before a month was expired, after our arrival, the living were hardly able to bury the dead. Whether it were brought thither in shipping: (for in long voyages, diseases grow at sea, and take away many passengers, and those diseases prove contagious,) or by the distempers of the people of the Island : who by the ill dyet they keep, and drinking strong waters, bring diseases upon themselves, was not certainly known. But I have this reason to believe the latter : because for one woman that dyed, there were ten men ; and the men were the greatest deboystes.

“ In this sad time, we arriv'd in this Island ; and it was a doubt whether this disease, or famine threatened most; There being a general scarcity of Victuals throughout the whole Island.”

A true and exact History of the Island of Barbadoes. p. 21. By Richard Ligon, Gent. London: 1673.

12. A gentleman, from Georgia, mentioned to me, an instance of the Yellow-Fever, which broke out among the negroes of one of his plantations, from the putrefaction of many bushels of Cotton-seed, heaped up in the open air. The fever, however, did not spread any further than among those who had been exposed to the noxious exhalations.

*From a MS. of the late Dr. Scandella,
in the possession of the Editor.*

13. Since my last, a contagious Fever has raged amongst us, which admits of no relief, cure, or abatement; never intermitting to the last moments of life. It has carried off three of my most intimate acquaintance, among which are my dear friends Mr. Andrew Hamilton, and Mr. Currie. Philadelphia has been a melancholy place, and many, whose business and family would permit them, have fled the city. But the air is now become much cooler, and those under the disorder revive: the symptoms (a pain in the head and back, and vomiting) are less violent, and the fever gradually abates. Messrs. Allen and Turner's family are yet under the disease, the one having lost a near relation, and Mr. Allen himself not out of danger.

Philadelphia, September 3d,
1747.

September 24th, 1747.

The Yellow-Fever is yet amongst us. Yesterday was buried young Samuel Powell, who died of it*.

14. "I lived five full years in the two Towns of *Mixco* and *Pinola*. Where I had more occasion to get wealth and mony, than ever any that lived there before me: for the first year of my abiding there it pleased God to send one of the Plagues of Egypt to that Country, which was of Locusts, which I had never seen till then. They were after the manner of our Grashoppers, but somewhat bigger, which did flie about in number so thick and infinite, that they did truly cover the face of the Sun, and hinder the shining forth of the beams of that bright Planet. Where they lighted either upon Trees or standing Corn, there nothing was expected but ruine, destruction and barrenness; for the corn they devoured, the leaves and fruits of trees they eat and consumed, and hung so thick upon the branches, that with their weight they tore them from the body. The high ways were so covered with them, that they startled the travelling Mules with their fluttering about their head and feet. My eyes were often struck with their

* The above are extracts of a letter, a copy of which was put into the Editor's hands, several years since. The dates are according to the old style. These extracts might, with more advantage, have been printed in connection with the extracts from Mr. Bartram's letters, in the first article of the Journal.

wings as I rid along, and much ado I had to see my way, what with a Montero wherewith I was fain to cover my face, what with the flight of them which were still before my eyes.

“ The Farmers towards the South-Sea Coast, cryed out for that their Indigo which was then in grass, was like to be eaten up ; from the Ingenios of Sugar, the like moan was made, that the young and tender Sugar Canes would be destroyed ; but above all, grievous was the cry of the husbandmen of the valley where I lived, who feared that their Corn would in one night be swallowed up by that devouring Legion. The care of the Magistrate was that the Towns of *Indians* should all go out into the fields with Trumpets ; and what other Instruments they had to make a noise, and so to affright them from those places which were most considerable and profitable to the Commonwealth ; and strange it was to see how the loud noise of the *Indians* and sounding of the Trumpets, defended some fields from the fear and danger of them. Where they lighted in the Mountains and High ways, there they left behind them their young ones, which were found creeping upon the ground ready to threaten with a second years plague if not prevented ; wherefore all the Towns were called with Spades, Mattocks and Shovels to dig long Trenches and therein to bury all the young ones.

“ Thus with much trouble to the poor *Indians*, and their great pains (yet after much hurt and loss in many places) was that flying Pestilence chased away

out of the Country to the South Sea, where it was thought to be consumed by the Ocean, and to have found a grave in the waters, whilst the young ones found it in the Land. Yet they were not all so buried, but that shortly some appeared, which not being so many in number as before, were with the former diligence soon overcome. But whilst all this fear was, these outcries were made by the Country and this diligence performed by the *Indians*, the Priests got well by it; for every where Processions were made, and Masses sung for the averting of that Plague. In *Mixco* most of the Idols were carried to the field, especially the pictures of our Lady, and that of Saint *Nicholas Tolentine*, in whose name the Church of *Rome* doth use to bless little Breads and Wafers with the Saint stamped upon them; which they think are able to defend them from Agues, Plague, Pestilence, Contagion, or any other great and imminent danger. There was scarce any *Spanish Husbandman* who on this occasion came not from the Valley to the Town of *Mixco* with his offering to this Saint, and who made not a vow to have a Mass sung unto Saint *Nicholas*; they all brought breads to be blessed, and carryed them back to their Farms, some casting them into their Corn, some burying them in their hedges and fences, strongly trusting in Saint *Nicholas*, that his bread would have power to keep the Locusts out of their fields; and so at the last these simple, ignorant and blinded souls, when they saw the Locusts departed and their Corn safe, cried out to our Lady some, others to Saint *Nicholas*, *Milagro*, a Miracle, judging the Saint worthy of praise

more than God, and performing to him their vows of Masses, which in their fear and trouble they had vowed, by which erroneous and idolatrous devotion of theirs I got that year many more crowns than what before I have numbered from the Sodalities.

" The next year following, all that Country was generally infected with a kind of contagious sickness, almost as infectious as the plague, which they call Tabardillo, and was a Fever in the very inward parts or bowels, which scarce continued to the seventh day, but commonly took them away from the world to a grave the third or fifth day. The filthy smell and stench which came from them, which lay sick of this disease, was enough to infect the rest of the house, and all that came to see them; It rotted their very mouths and tongues, and made them as black as a coal before they died. Very few Spaniards were infected with this contagion; but the Indians generally were taken with it. It was reported to have begun about *Mexico*, and to have spread from Town to Town till it came to *Guatemala*, and went on forwards; and so likewise did the Locusts the year before, marching as it were from *Mexico* over all the Country. I visited many that died of this infection, using no other Antidote against it, save only a handkerchief dipped in Vinegar, to smell unto, and I thank God I escaped where many died. In *Mixco* I buried ninety young and old, and in *Pinola* above an hundred; and for all those that were eight years old, or upwards, I received two Crowns for a Mass for their souls delivery out of Purgatory. See good

Reader (continues our author), whether the conceit of Purgatory have not been a vain policy of *Rome*, to enrich the Priest and Clergy, with Mass stipends from such as die, making them believe that nothing else can help their souls, if once plunged into that conceited fire; Where thou maist see that one contagious sickness in two small Towns of *Indians* brought unto me in less than half a year near a hundred pounds for Masses for almost two hundred that died. Nay such is the greedy covetousness of those Priests, that they will receive three or four Mass stipends for one day, making the people believe that the same mass may be offered up for many, and do one soul as much good as another. Thus with the Plague of Locusts, and the contagion of sickness, for the first two years together had I occasion to enrich myself, as did other Priests my neighbours."

The preceding observations on the Locusts and malignant Fever of the empire of Mexico, are copied from *A New Survey of the West-Indies. Being a Journal of Three thousand and Three hundred Miles within the main Land of America: By Tho. Gage, the only Protestant that was ever known to have travelled these Parts.* London: 1699. See pages 367—371.

It was in the year 1632, that the fever of which he has given an account, proved so mortal to the Indian inhabitants. There can be little doubt, that this was no other than the malignant disease now generally known by the name of Yellow-Fever. Imperfect as is the description of our author, he mentions one

important circumstance, that may serve to point out the identity of the disease to Yellow-Fever. He says, it " scarce continued to the seventh day, but commonly took them away —— the third or fifth day."

What real connection the disease had with the locusts may, perhaps, be doubtful. It seems probable, that the same state of the atmosphere which was so favourable to the appearance of such immense swarms of these insects, was also favourable (perhaps by occasioning a rapid putrefaction of animal and vegetable matters, by a great increase of evaporation from the marshes, stagnant ponds, &c.) to the production of the fever. Be this as it may, Gage has put us in possession of facts sufficient to show, that a malignant fever (in all probability the same as that which, under the name of yellow-fever, has ravaged the cities of the United-States, as well as the West-India islands) was not unknown on the continent of America, before the middle of the 17th century. The fever mentioned by Richard Ligon (see a preceding article) was, doubtless, the same; and yet, the Abbe Clavigero asserts, that this disease is of very modern date, in Mexico. "The *vomito prieto* (says this writer), which appears to be an endemic distemper, is extremely modern, and is not felt except in some places of the torrid zone, frequented by Europeans. The first who were seized with it were the sailors of some European vessels, who, immediately after the bad diet they had during their voyage, eat greedily of fruit, and drank immoderately of brandy. Ulloa affirms, that in Carthagena, one of the most unhealthy

places of America, this distemper was not known before the year 1729, and that it began among the crews of the European vessels, which arrived there under the command of D. D. Giustiniani." *The History of Mexico.* By Abbe D. Francesco Saverio Clavigero. Vol. II. p. 340, 341, note. English translation. London: 1787.

The Abbe boasts, that the plague (perhaps yellow-fever) is altogether unknown in the New-World. Vol. II. p. 340, 341.

It is remarkable, that authors so learned as Don Ulloa and Clavigero should have entirely neglected the striking passages which I have adduced from Ligon and from Gage. It is true, indeed, that the Abbe does not estimate the veracity of Gage very high. But, however this author (whose conduct, in some respects, I cannot applaud) may have sometimes exaggerated, there seems no reason to believe that he has done it in the account which he has given of the malignant fever, by which he added so much to the value of his purse. Indeed, with respect to another disease (the Goitre), I have shown, that Gage was a faithful recorder of facts. See a Memoir concerning the Disease of Goitre, as it appears in different parts of North-America. Pages 79, 80. Philadelphia: 1800.

EDITOR,

15. The locusts mentioned by Gage must not be confounded with the *Cicada septendecim*, of which accounts are given in the first section of this Journal. He expressly says, that " they were after the manner of —— Grashoppers, but somewhat bigger." They were, doubtless, a species of the genus *Gryllus*, and, of course, considerably allied to the locusts (*Gryllus migratorius*) of the East, whose ravages have employed the pens of many writers, from a very distant period of time. Whether the species mentioned by Gage be described by any systematic writer on Entomology, I do not know.—It appears, from the Abbe Clavigero's *History*, already quoted, that locusts (in all probability of the same species as those of which Gage speaks) have, at different times, committed great ravages in the Mexican empire. " The butterflies (says he), although numerous, are not to be compared, in that respect, with the locusts, which, sometimes darkening the air like thick clouds, fall upon the sea coasts, and lay waste all the vegetation of the country ; as I have myself witnessed, in the year 1738, or 1739, upon the coasts of Xicayan. From this cause a great famine was lately occasioned in the Peninsula of Yucatan : but no country has been visited by this dreadful scourge so often as the wretched California." In a note, the Abbe adds, " In the History of California, —— will be found a great many observations with respect to locusts, made by the Abbe D. Mich. del Barco, who lived upwards of thirty years in that country." The History of Mexico. Vol. 1. p. 70.

EDITOR.

16. I have used the Saccharum Saturni in three cases of uterine hæmorrhage, with complete success. I have directed it in many more, but have not always heard the result. I prescribe it, in all cases, with this precaution: the usual astringents are given, and with these some powders of the saccharum saturni. The former are first used: if they have not the desired effect, and the disease increases, they then take the latter until it abates, after which the former are again used. In this manner, I have prescribed it (the saccharum saturni) for many distant patients; but in three dangerous cases, to which I was called, it was used alone, and all were cured.

JOHN R. YOUNG, M. D.

*Letter, dated Hagerstown, March 29th,
1804.*

17. The Datura Stramonium (Jamestown-weed, French-Chesnut) grows, in great abundance, about St. Vincennes, on the River Wabash. It is not, however, supposed to be a native plant in this part of the country, but was introduced there about the year 1785. The plant is cut down by legal order; for the inhabitants assert, that they were never affected with remitting fevers, until the Datura was introduced among them. The effluvia arising from the leaves, stems, and flowers of the plant, are supposed to have given origin to the disease, which generally makes its appearance (at Vincennes) about the begin-

ning of September.—It is not probable that the mere effluvium from this offensive plant does produce the fevers that were ascribed to it. And yet it is to be observed, that a similar opinion concerning the *Datura* was entertained by some of the physicians in New-York, towards the close of the American revolutionary war.

*EDITOR'S MS. Medical Journal,
for 1793.*

18. The *Stramonium* is, unquestionably, a southern plant, and is gradually diffusing itself into many parts of the United-States, &c., in which, a few years since, it was entirely unknown. In September, 1797, a solitary plant was shown to the Editor at Wilkes-barre, in the Wyoming settlement, where it was deemed a great curiosity, and a new-comer.—By what means it is so extensively diffused through the country, seems difficult to conceive. It does not seem to be eaten by any of the regularly-migrating birds. It is, indeed, sometimes eaten by the domestic turkey, which is essentially injured by it.

19. The *Stramonium* is one of those narcotic vegetables, which, when taken in large quantity, sometimes induce the disease of *Tetanus*. About the year 1765, when some of the British troops, under Sir John Sinclair, were stationed in the vicinity

of Elizabeth-Town, in East-New-Jersey, three of the soldiers having collected a quantity of the plant, which they mistook for Lambs-quarters (*Chenopodium album*), it being in the spring, when the two plants somewhat resemble each other, they dressed the Stramonium, of which they eat. One of the men became furious, and ran about like a madman. What was the termination of the case, my informant could not tell. A second was seized with a genuine tetanus, of which he died. The fate of the third person is not remembered.

EDITOR'S MS. *Medical Journal,*
for 1791.

20. Our Indians (the Delawares, &c.) are acquainted with a plant, with which they often (intentionally) destroy themselves. From the description which has been given of it, it is certainly an umbelliferous plant. It grows in marshy situations, and has a hollow stem. The root is the part which is used, and this is eaten raw. The plant is, probably, a species of *Cicuta*, or of *Scandix*.—The Indians likewise poison themselves with a decoction of the *Kalmia latifolia*, which is well known in Pennsylvania by the name of Laurel, and in Virginia by that of Ivy.

EDITOR'S MS. *Medical Journal,*
for 1794.

21. About the year 1762, the inhabitants living upon Carver's-Creek*, a branch of the river called Cape-Fear, in North-Carolina, at the distance of about one hundred miles above the mouth of this river (but, perhaps, not more than forty miles, in a straight course, from the sea-coast), were severely afflicted with a malignant fever, which was deemed contagious. The most urgent symptom was a pain in the head ; and a black vomiting accompanied some of the cases. The disease was particularly mortal to the male sex, especially those of a full phlethoric constitution, and was called the “Pleurisy in the head.” For about seven years preceding the appearance of the fever (which raged in the autumn), there had been so great a drought, that the people seemed to fear, they were never again to have rain. After the commencement of the disease, there fell a greater quantity of rain in three months, than had fallen in seven years before.—The fever was not confined to the settlement at Carver's Creek, but prevailed very generally through the maritime part of North-Carolina, at the same time.

*EDITOR'S MS. Medical Journal,
for 1794.*

22. A plant called the Scour-Grass is very common in many parts of the United-States, &c. It is the *Equisetum hyemale* of Linnæus. There are many

* About sixty miles from Fayetteville.

acres of this plant in the neighbourhood of Fort-Detroit. In the winter-season, the horses very frequently eat of it, in consequence of which they almost always die. It is said, that upon examining their stomachs, they are found to be much cut or lacerated by the plant, the surface of which is very rough: hence its provincial name, above-mentioned. But although the plant is thus fatal to horses, horned cattle and hogs fatten upon it. The hogs, it is said, do not swallow the plant, but only the juice, and reject the fibrous substance. To horned cattle, it is supposed to be innocent, because they chew the cud. Deer (*Cervus Virginianus*) also eat it, with safety; and when cut fine, it seems to be a grateful food to the common dunghill-fowls. The plant has a sweetish taste.

That the *Equisetum hyemale*, when it is eaten in the winter-season, often proves destructive to horses, is very certain: but the theory of its manner of producing death does not seem to be well understood. It is the opinion of some intelligent persons, who reside in the vicinity of Detroit, that the plant proves mortal merely by reason of the ice which is formed in the cavity of the stem. These cylinders of ice are supposed to occasion the death of the animal, both by their extreme coldness, and by the mechanical irritation which they give to the coats of the stomach. It is somewhat in favour of this theory, that the *Equisetum* is known to be innocent to horses in the sum-

mer-season, at which time they crop the tops of the plant. This subject deserves further inquiry.

EDITOR'S *MS. Medical Journal,*
for 1793.

23. The root of the Adelia Ricinella, or Ram-Goat-Bush, is said to be a powerful emmenagogue. It is used in the shape of an infusion. The negroe-women (in some of the West-India islands, of which it is a native) make use of it, to procure abortion.—I have employed the powdered root in a case of obstruction of the catamenia. It is, certainly, a vegetable of great activity.

EDITOR.

24. A decoction of the root of the Zanthorrhiza apiifolia* of L' Heritier is used by some of the southern tribes of Indians, as a lotion, in certain diseased states of the eyes.

EDITOR.

* See Collections for an Essay towards a Materia Medica of the United-States. Part Second, p. 11—13.

25. One of the favourite cathartics of our Indians, in cases of obstinate costiveness, is a large draught of Bear's-oil.

EDITOR.

26. Some few months since, a considerable quantity of a medicinal article was brought from the western parts of Virginia, and offered for sale in Philadelphia, as Ipecacuanha. Upon examining it, the Editor found it to be nothing but the powdered root of the *Spiraea trifoliata* of Linnæus, a very common plant in many parts of the United-States, where it is known by the names of Ipecacuanha, Bowman's root, &c. &c.—Of the medicinal powers of this plant, some notices may be found in *Collections for an Essay towards a Materia of the United-States.* Part First, page 26: and Part Second, page 39.

EDITOR.

27. "The juice of the fruit of the Papaw, and of all the other parts of the tree in its fresh state, is milky, and extremely acrid; it is used in the Indies as a remedy for the ringworm." MR. DAVY.— It is said that the inspissated juice of the same tree (the *Carica Papaya* of Linnæus), which grows spontaneous in the West-Indies, and also in the Peninsula of East-Florida, is used, with much advantage,

in some of the Islands, as an anthelmintic. The precise manner of employing it is not known to the Editor.

This tree must not be confounded with the Papaw of the United-States, which is the *Annona triloba* of Linnæus: the *Orchidocarpum arietenum* of Michaux.

EDITOR.

28. Dr. Bostock, of Liverpoole, in England, has lately analysed, with great care, the saline matter, which is found upon stone-walls, and other similar situations. He finds it to be a sulphate of magnesia (Epsom Salt), in a pretty pure state.—Considerable quantities of the same substance have been found, in certain calcareous caverns, in the western parts of Virginia, particularly in the county of Munro. In these, the salt is not confined to the walls of the caverns, but forms a floor of considerable depth. This matter has often been taken for Nitre, and sometimes for Borax.

EDITOR.

29. In one of these caverns, upon a water of Green-Bryar, a branch of the river Kenhaway, there were found several of the bones of an animal, of which same account, with ingenious conjectures, is published in the 4th volume of the *Transactions of the*

American Philosophical Society. Mr. Jefferson (the author of the paper alluded to) imagines that the bones have belonged to an animal of the genus *Felis*, or Cat: he has given it the name of *Megalonyx*. But a correct inspection of the osteology of the animal (as far as we are capable of examining it, for we are not yet in possession of a complete Skeleton), renders it sufficiently certain, that the Green-Bryar-bones did *not* belong to any animal of the family of Cat, or even to any of the order (*Feræ*) to which that family belongs. They must be referred to some animal of the order *Tardigrada*, which comprehends the genera *Bradypus* (Sloth), *Dasypus* (Armadillo), and others.

Mr. Cuvier (of Paris), who has devoted more sedulous attention to the subject of fossil bones than any person now living, has given an account of a very remarkable skeleton, which was found near the river Plata, in South-America. This skeleton is preserved at Madrid, and excellent engravings of all the bones in connection with each other, and of the individual bones separately, have been published in that city*. A careful inspection of those figures, and of the Green-Bryar bones, will render it certain, that the Plata and Virginia animals were generically, if not specifically, the same. To the former Mr. Cuvier has given the name of *Megatherium*.

* Descripcion del Esqueleto de un Quadrupedo muy corpulento y raro, &c. &c. Publicala Don Joseph Garriga, &c. Madrid: 1796.

Whether this animal exists any longer is extremely doubtful. In all probability, it has perished, as it seems likely the mammoth (which was a species of Elephant) and many other *species* have done. For the *immortality* of species, with respect to this earth, is one of the many dreams of naturalists.

Should future inquiries completely establish the fact, that the animal of Virginia and that of South-America were specifically the same, it will serve (with many other facts) to show, that animals of various natures had, in former, and very remote, ages, a much more extensive geographical range over the globe, than they have at present.

EDITOR.

30. The following observations, copied from an original manuscript, in the Editor's possession, can hardly fail to be interesting to the curious in inquiries concerning the subject of the last article.

" John Bartram wrote to James*, that he is informed by a letter from Colonel Bouquette, that some Shawanese-Indians had brought to Pittsburg, a tooth weighing 6 pounds and $\frac{3}{4}$, and another piece of one, which he calls a tusk, 14 inches long, and the part where it is broke off as thick as a man's arm; both in his hands, by which he is confirmed in the

* James Logan, Esquire.

opinion, they could belong only to Elephants; and requests James to make inquiry of any of that nation, at this treaty*, how far these skeletons lie from the Ohio, with sundry other queries: to all which he (James) received the following answers, from two intelligent Shawanese-men, by an interpreter:

“ That the place where they lie is about three miles from the Ohio, salt and moist, about the extent of Lancaster-town, in the midst of a large savanna, four days’ journey below the lower Shawanese-town, on the east side of the River: that there appear to be the remains of five entire skeletons, with their heads all pointing towards each other, and near together, supposed to have fallen at the same time. When they were asked to describe their several parts, they began with the heads, of which two were larger than the rest. One of these, they said, a man could but just grasp in both his arms; with a long nose, and the mouth on the under side. They next mentioned the shoulder-blade, which, when set at end, reached to their shoulders, and they were both tall men. What they called the cup (or socket) of that bone, was equal in size to a large bowl. The thigh-bone, when broke asunder, would admit of a little boy’s creeping into it. They were asked, if they had seen long bones they called horns: they answered, they had; and, by the distance from themselves to the door, they showed them to be ten or twelve feet long; and added, that by the bones, they judged the creature,

* The Indian treaty at Lancaster, in 1762.

when alive, must have been the size of a small house, pointing, from the windows, to a stable in sight.

" James then asked, if the place where they lay, was surrounded with mountains, so as to admit of a probability of its ever having been a lake. They answered, the place was salt and wettish, and, by having been much trod and licked, was something lower than the adjacent land, which, however, was so level, to a prodigious extent, that the lick, as they called it, could never have been covered with water, and that there were many roads, through this extent of land, larger, and more beaten by buffaloes, and other creatures, that had made them, to come to it, than any they saw in this part of the country*.

" In answer to being questioned, if they had seen such bones in any other place, they said, they had seen many such scattered here and there, in that large tract of land, some upon the surface, and some partly buried, but all much more destroyed by time, than those they had described, and not any whole skeletons.

" Upon being asked, if they had ever heard, from their red-men, when these five were first observed, or if they, or their fathers, had ever seen any such large creatures *living*, as these bones were supposed to have been a part of, they answered, they had never heard them spoke of, other than as in the condition

* Pennsylvania, &c.

they are at present; nor ever heard of any such creature having been seen by the oldest man, or his father: that they had, indeed, a tradition, such mighty creatures had once frequented these savannas, and there were then men of a proportionable size to them, who used to kill them, and tie them in their *hoppesses**; and throw them on their backs, as an Indian now does a deer; that they had seen marks in rocks, which tradition said, were made by these great and strong men, sitting down with their burthens, just such as a man makes by sitting down on the snow: that when there were no more of these strong men left alive, God killed these mighty creatures, that they might not hurt the present race of Indians; and added, that God had killed these last five they had been questioned about; which the interpreter said, was to be understood, they supposed them to have been killed by lightning. These, they said, were their traditions: but as to what they knew, they had told it all.”

The preceding descriptive account of the bones of the huge Ohio animal is much more accurate than might have been expected from uncultivated Indians. There is one part of the description which is particularly entitled to attention. The Indians described the mammoth as having “a long nose, with the mouth on the under side.” From this, it may, I think, be inferred, that they had seen the proboscis

* The *hoppes*, or rather *happis*, is a band to carry with, on the back. EDITOR.

of the animal. That it was provided with such an instrument, there can be little doubt: the structure of the animal renders it probable; and that the proboscis, though composed of substance much more liable to decay than the bones, may have been preserved in the salines, or licks, for hundreds of years, may be credited. The flesh and skins of other large animals are known to have been preserved, in similar and in other situations, for as great a length of time as we have any grounds to believe, that the skeletons of the American animals had lain buried in the mud of the Ohio. Some fortunate discovery will ultimately prove, in the most satisfactory manner, that the mammoth was furnished with a proboscis, and that it was a species of elephant.

The cautious manner in which the Indians delivered their traditional tale, concerning the Ohio animal, reflects some credit upon them. It may be worth observing, that this tradition is essentially different from that published by Mr. Jefferson, in his *Notes on the State of Virginia*. Yet both of them proceeded from the Shawanees. The one is, perhaps, entitled to as much attention as the other.

A complete history of the skeleton of the American Elephant is a *desideratum* in natural history. It is not altogether creditable to the philosophers of the United-States, that something of this kind has not been published by them. In *some* respects, they are, certainly, better qualified to undertake, and to perform, the task than the naturalists of Europe. But it

is ever to be regretted, that the principal cultivators of natural science, in the United-States, are professional characters, who cannot, without essentially injuring their best interests, devote to these subjects, that sedulous attention which they demand.

The Editor of this work will gladly receive any facts or observations, that may tend to complete the history of the mammoth. He is far from intending to undertake a regular work on the subject: but he will be happy to make his *Medical and Physical Journal* the vehicle of information for those who may possess talents and leisure for an investigation so worthy of the attention of philosophers.

31. The Editor is informed, that very considerable quantities of Plaster of Paris have lately been discovered in the state of Virginia, upon one of the head-waters of the Staunton (which runs into the Roanoke), and at the distance of about twenty-five miles from Fincastle. It is much to be wished, that this information may prove to be correct, as the utility of this substance, used as a manure, is more and more experienced in many parts of the United-States, particularly, perhaps, in some of the poorer counties of Virginia, such as Loudon, &c. The price of the article, the greater part of which is imported from France and from Nova-Scotia, prevents the more extensive employment of it, in many parts of the country, where its influence is much wanted.

It cannot be doubted, that, at some future day, immense stores of plaster will be discovered within the limits of the United-States, especially, perhaps, in those parts in which limestone, marble, and other forms of calcareous earth, and pyrites abound. Such are the counties of Lancaster, York, and Dauphine, in Pennsylvania; a considerable extent of country in the state of New-York; and the great valley of Berkeley, or Shenandoah, in Virginia. It is even certain, that plaster was formerly found in some of these districts, though the particular spots in which it existed, are no longer known. The "transparent limestone," a quarry of which (according to a MS. by the Editor's father) was found in Lancaster-county, at least thirty years ago, is not now known.—Immense quantities of plaster have, however, been found in the state of New-York, particularly on the Nine-mile-Creek, or outlet of the Owasko-lake, and at the Falls of the Genessee (Jenissea) River. At the Falls of Niagara, on the Canada side, the Editor has seen large masses of this substance, some of which is daily forming by the union of the sulphuric acid (for there are great stores of pyrites there) with the limestone.

32. It is believed, that hitherto plaster has been found in the greatest abundance, and indeed almost only, in those districts of the Union, in which we discover the most decided vestiges of organic remains, in the strata of limestone. This remark particularly applies to the State of New-York, the adjacent cal-

careous strata of which (so far as the Editor has observed, in the course of an extensive tour through that State) are almost entirely made up of shells, and animal *exuviae*, of various other kinds. The Tuscarora-town, at the distance of a few miles from Niagara-Falls, is situated upon a bed of limestone, almost every part of which is impressed with the images of sea-shells, and other animals. The Editor traced this bed for at least two miles ; but he has reason to believe, that it stretches Eastward beyond the Jenisseia-River.—Hitherto (so far as the Editor knows), no vestiges of organic remains have been discovered in any of the gypseous strata of the United-States.

33. "Near the waters of Buffaloe-creek (which runs into Lake-Erie), a most curious stone has lately been found, which appears to have been of a vegetable growth. It weighs about two pounds, is nearly round, and about four inches in diameter. It is of a darkish colour, and resembles a pear. A part of it was discovered projecting out of a solid rock, from which it was extracted by means of a crow-bar. It was accidentally split into nearly two equal parts in the act of severing it from the rock, upon which nearly a pint of unctuous matter, of a greenish colour, and rancid smell, oozed from its interior parts, which appear to be of the nature of a sponge. It seems to have been united to the rock, by a large stem, nearly the size of one's wrist. The internal parts appear to be composed of an infinitude of small cavities, which are

separated from each other by their divergent partitions, which commence at the stem, and terminate at every part of the extremity of the stone. It is said, it had the power of generating the unctuous matter, with which it was filled, while connected with the rock: but I rather suspect, it is some petrified vegetable production, and that the unctuous matter is a substance which was peculiar to the fruit, at the time of its petrifaction."



MR. JAMES W. STEVENS.

*MS. Journal, in the possession of
the EDITOR.*

The above-described stone is in the possession of the Editor. It is, unquestionably, a Madrepore, impregnated with asphaltum; and an inspection of the object will plainly show, that the penetration of the bituminous matter was from without. The spot in which the stone was found (and there are said to be large quantities of the same kind) is a part of the ancient bed of the sea, in this part of North-America. Bituminous springs are not uncommon in the same tract of country. One of the principal of these is the "Oil-Spring," upon a branch of the Allegeny-river.



34. Naturalists have observed, that when shells are found in slate, and other schistose rocks, they are generally observed to be in a *compressed* state; whereas little, or nothing, of this compression is observed upon shells that are impressed in limestone. This

observation applies very strictly to the schistic strata of the United-States. Of such strata I have examined great masses, particularly in the neighbourhood of Little-Beaver creek, a branch of the Ohio ; and I do not recollect to have seen a *single* instance, in many hundred, in which the shells were not compressed.

EDITOR.

35. An extensive bed of Porcelane-Earth (Argilla Porcelana) has been discovered in the State of Maryland. It is found in close connection with mines of iron ore, near the foot of the Ketocton-Mountain, not far from Hagerstown. The earth is of a fine quality, and cannot fail, at some future period, to attract the attention of the manufacturers of earthen-ware.

The Ketocton-Mountain has an extensive range through the United-States. It is not improbable, that the porcelane-earth will be found, in many other situations, as in Pennsylvania, &c., in the vicinity of this chain. Be this as it may, we have already found the earth in the neighbourhood of some of the other ranges of mountains, in Virginia, and in North-Carolina. In the first of these states, it has been known for more than thirty years, by the name of " Chalk," and has been used, as such, by the country-people.

EDITOR.

36. Inexhaustible beds and quarries of coal have already been discovered in the United-States, particularly in the western parts, beyond the Allegeny-Mountains. New mines of this invaluable article are discovered daily, particularly upon the waters of the river Susquehanna, as upon the Juniata, &c. These are among the most encouraging discoveries that are made in our country : they show us, that Nature has in store for us, one of the most valuable species of fuel, when our forests, in the cultivated parts of the country, shall become very scarce. Notwithstanding this, however, it is to be hoped, that the inhabitants of the United-States will, in future, be more careful of the preservation of forest-timber, than they have, hitherto, been. It will hardly be denied, that much of our timber is daily cut down, with scarcely any regard to the future.

EDITOR.

37. The White-Mountains, in the State of New-Hampshire, have lately been ascended by Mr. William Peck, a very intelligent naturalist ; and by the Reverend Dr. Menasseh Cutler (of Ipswich), to whom we are indebted for some account of the indigenous vegetables of New-England. These gentlemen found the height of the mountains but little less than 10,000 feet above the level of the sea. It is to be hoped, that the result of their observations will be communicated to the public. They cannot fail to prove in-

teresting. A species of *Erica*, or Heath, is said to be one of the plants which they found, in their botanical excursions, on the mountains. Should this prove to be the case, it will appear that North-America is not, as has been supposed, wholly destitute of this family of plants, both the species and individuals of which are so extensively diffused through the old-world.

EDITOR.

38. It is a circumstance worthy of the attention of our citizens, that Oysters can be preserved upon heaps of coal, beaten into small pieces, for a longer time than in any other situations, except those in which they are naturally found. By many of the dealers of oysters in Scotland, it is believed, that there can be no more effectual method of fattening these animals, than by placing them upon such beds of coal, on which salt and water are occasionally besprinkled, to keep the oysters moist. Beds of coal, or other similar matters, seem, in some countries, to be the favourite places of residence of oysters. This is remarkably the case in Scotland. In the Firth of Forth, especially opposite to the coal-works of Lord Abercorn and Sir Archibald Hope, where the strata of coal gradually descend to the sea-coast, and begin there to make their appearance, oysters are dragged in the greatest quantities, and of a remarkable fine quality.

EDITOR'S MS. JOURNAL,
Edinburgh, May 8, 1788.

N. B. Live Lobsters may likewise be very well preserved, for several days, upon coal.

39. Permit me to offer some observations on your ideas (relative to the Fascinating Faculty which has been ascribed to Serpents), which seem, like the egg of Columbus, difficult to find, but when found so clear, that one can hardly conceive how they could have remained latent, for so long a time.

That snakes, however, under certain circumstances, do emit a fetid vapour, I have myself observed. Having caught a Snake (*Coluber Natrix*), which is entirely innoxious, we hunted him with a young dog, and frequently urged on the dog, which seemed much affrighted. At length, the snake grew very angry, hissed at the dog, and emitted such a fetid and *narcotic* smell, that the whole room was impregnated with it. I found the same smell in the *smegma* of the two sacs, which run from the anus to the beginning of the tail. The use of these sacs is quite unknown to me. They seem to have much resemblance to the sacs of many of the *mammalia*, in which we find them between the anus and the genitals.

PROFESSOR AUTENRIETH.

Letter, dated Tübingen, in Wirtemberg,
October 7th, 1797.

40. *September 11th, 1801.* This afternoon, at 43 minutes past 4 o'clock, a full-grown rabbit (*Lepus Cuniculus*) was bitten, two or three times, by a small rattle-snake (*Crotalus horridus*), which I kept in a glass-vessel. The bites were inflicted in quick succession. The rabbit made a great deal of noise, and, almost instantly, exhibited very decided symptoms of the effects of the poison. He passed water, and was incapable of making any regular use of his hind extremities. His breathing was quick ; it had some convulsions, and, in short, was so much affected, that (having observed similar effects, in many other animals) I thought he would die, in a very short time.

At the end of one complete hour, however, the animal seemed to be very much recovered, moving about, and using his legs very well. At 8 o'clock, at night, he was still better, though he continued to labour under the influence of the venom. Upon one occasion, on his attempting to run away, he fell down upon his side. I observed also, that when he was put into any particular place, he did not attempt to move away, which at other times he was wont to do.—Towards 10 o'clock, at night, the animal was in the same spot, in which I had left him two hours before ; and here I found him, in the morning, at 7 o'clock.

Soon after this, he began to eat grass ; but he was still affected : for when he attempted to run away, he fell down upon his side. He afterwards ate clover, willow-leaves, and bread, but, through the whole of the

day, he appeared sick, and languid, and was unwilling to move. This was observed by the people of the house, though they knew nothing of the experiment.

Through the whole of Sunday the 13th, he still laboured under the influence of the poison: but on Monday, was as well as ever, *though no means were used to relieve him*.—Similar cases, in other animals, and even in the human system, have, doubtless, given rise, in some degree, to the high reputation which certain vegetables, &c., have acquired as *specifics* for the bite of the rattle-snake, and other serpents.

EDITOR'S (*MS.*) *Anatomy and Physiology of the Rattle-Snake, and other North-American Serpents.*

41. *August 27th, 1801.* A large full-grown male rabbit was put into a cage, which contained a large and vigorous rattle-snake. But although he was kept here, for a considerable time, the snake never attempted to bite him. It seemed very evident, from his actions, that he was afraid of the rabbit; which did not seem, in the least, afraid of him. On the contrary, frequently, while the snake was very near to him, he ate, unconcernedly, of the dried grass, in the box. At length, finding that the snake would not bite him, though he was often irritated with a stick, with a view to provoke him to do so, I put the rabbit into another partition of the cage, which contained a smaller rattle-snake. This immediately bit

the rabbit in the leg, in consequence of which he was almost instantly affected. He appeared to be very sick, threw his ears back upon his neck, and discharged both urine and feces. When taken out of the cage, and put upon the floor, he seemed, at times, to be so much recovered, that I imagined he would ultimately resist the influence of the poison. Upon attempting to get up, he staggered, and fell down, and appeared extremely languid and debilitated, but exhibited no symptoms of pain, made no noise, vomited none, but died in 74 minutes, from the time the bite was inflicted.

Upon examining the wound, I found that the fang (the mark of only one fang could be perceived) had been carried through the skin (having drawn a very small quantity of blood), and almost entirely through the limb. All around the bite, for about four inches, the limb, &c., were of a dark colour, the blood effused, and the solid substance of the parts converted (pretty extensively) into a bloody, gelatinous state.—The great curvature of the stomach appeared preternaturally inflamed, or injected of a brown or mahogany colour. This appearance, I had little doubt, was occasioned by the poison. The heart and other parts of the body were not examined.

This experiment was made in the presence of Dr. Woodhouse, Dr. Jacobs, Dr. Seybert, and my pupils Dr. Jarvis Roebuck, and Mr. James Bartram.

EDITOR'S (MS.) *Anatomy and Physiology, &c.*

42. The *Macpalxochitl*, figured by Clavigero, after Hernandez, is one of the most singular trees hitherto discovered. The flower is said to be "like a tulip, but its pistillum represents the form of a bird's foot, or rather that of an ape, with its six fingers terminated with as many nails." The common Spanish inhabitants of Mexico "call the tree which bears these curious flowers *Arbol de Manitas.*" History of Mexico. Vol. I. p. 19.

This tree, the existence of which might have been doubted, if our only authorities were Hernandez and Clavigero, has lately been seen by Mr. Humboldt. It belongs to the class of Monadelphia, and has been fully described by a Spanish botanist, in Mexico. It is a stately tree, and only a single individual of it is known to exist, within the limits of the Mexican empire. This grows in the ancient gardens of the kings of Mexico, and has, doubtless, been introduced from some distant region: perhaps, from some of the more northern countries (now ceded to the United-States), through which the Mexicans passed in their progress to the vale in which they founded their city and empire. I shall not, therefore, be surprised to hear, that the *arbol de manitas* has been found in the western parts of the United-States, in the newly-acquired Louisiana, a country which will, in all probability, supply us with the Thea, the Laurus Camphora, and many other vegetables equally, and even much more, valuable and precious.

EDITOR.

43. The botanical history of the tree which furnishes us with the valuable bark, known by the name of Angustura, and used, with so much advantage, as a tonic, especially in the diseases of children, has not been ascertained until lately. Mr. Humboldt has seen this tree growing. He finds it to be a new genus, nearly allied to Cinchona, and like it belonging to the class Pentandria, but to a different order, of the sexual system. The opinion, therefore, that the Angustura was the produce of a species of Magnolia, is entirely void of foundation.

EDITOR.

44. The vegetable which produces the genuine Ipecacuanha of the shops, is, at length, discovered. It is neither a Viola, a Psychotria, nor an Euphorbia, but a new genus, to which the name of *Callicocca Ipecacuanha* has been given. It is a native of Brazil, and might, no doubt, be easily introduced into the United-States, in some parts of which it would, in all probability, grow as well as in its native clime.

EDITOR.

45. In the Wyoming settlement of Pennsylvania, the inhabitants are said to employ, with great advantage, the bark of a particular vegetable, as a substitute for the Peruvian bark. The Editor is informed,

that the shrub which furnishes this bark is a species of Viburnum, or Mealey-tree.

46. A decoction of the Sanicula Marilandica, or Maryland Sanicle, is said to be employed, with good effect, by some of the country practitioners, as a diuretic, in cases of dropsy. This plant grows very abundantly in many parts of the United-States.

EDITOR.

47. The extremely viscid juice of the bulbs of a species of Ophrys, well known in Pennsylvania and Virginia, by the name of "Adam and Eve," has been found, by the ladies of the latter State, to be one of the best articles, hitherto discovered, for mending broken china-ware. An analysis of this peculiar juice is worthy of the attention of the chemist. The plant is not uncommon in a rich soil, and in shaded situations*.

A still more powerfully adhesive article, for the same purpose, is (I am informed) the gum that exudes from the trunk of the Morella cherry-tree.

EDITOR.

* See Elements of Botany, &c. Part First, p. 10, 11. Plate II. Fig. 6.

48. The *Æsculus Pavia*, or Scarlet-flowered Horse-Chesnut, is a native of many parts of North-America, particularly of the counties south of Virginia. The inhabitants of Carolina, Georgia, &c., have discovered, that the root of this tree, or rather shrub, mashed and beaten up with warm water, possesses a detergent quality, especially applicable for cleansing woollens. It is found to render the stuffs very white and soft to the touch, whereas soap is known to leave a disagreeable harshness in the articles. “It is also said (Mr. William Dunbar observes) to preserve unimpaired the fine dies of chintz and calicoes ; but I have observed, that it does not produce the desired effect, neither upon cotton nor linen, seeming to adhere to it rather like gum than soap.”

Clavigero says, that the Mexicans supplied the want of soap, of which they were ignorant, “ by a fruit and a root. The fruit was that of the *copalxocotl*, a tree of moderate size, which is found in Michuacan, Yucatan, Mizteca, and elsewhere. The pulp, that is under the rind of the fruit, which is white, viscous, and very bitter, makes water white, raises a froth, and serves like soap to wash and clean linen. The root is that of the *amolli*, a small plant, but very common in that country, for which *Saponaria Americana* seems to be a more proper name, as it is not very dissimilar to the Saponaria of the old continent : but the amolli is more used to wash the body now, and more particularly the head, than for clothes.” The History of Mexico. Vol. 1. p. 440.

EDITOR.

THE
PHILADELPHIA
MEDICAL AND PHYSICAL JOURNAL.

SECTION FOURTH.

REVIEW.

Transactions of the American Philosophical Society, held at Philadelphia, for promoting useful Knowledge. Vol. 6. Part 1. Philadelphia: from the press of the late R. Aitken. The present proprietors, John Conrad & Co.

THIS very respectable Institution continue their labours, with zeal and success. The present portion of their sixth volume will not derogate from their former character, as cultivators of science. Some account of the principal papers, relative to natural science, will be given in the next number of the Journal. At present we shall subjoin a list of all the papers.

1. On the Language of Signs among certain North-American Indians. By William Dunbar, Esq. of the Mississippi Territory. Communicated by Thomas Jefferson, President of the Society.

2. Meteorological Observations, for one entire year. Made by William Dunbar, Esq., at the Fo-

rest, four and a half miles east of the river Mississippi, in north latitude $31^{\circ} 28'$ and longitude $91^{\circ} 30'$ west of Greenwich, on an eminence about 150 feet higher than the level of the highest waters of the annual inundation of the Mississippi; beginning on the first day of February, 1799, and ending the thirty-first of January, 1800, inclusive.

3. Description of a singular Phenomenon seen at Baton Rouge, by William Dunbar, Esq. Communicated by Thomas Jefferson.

4. A short and easy rule for finding the equation for the change of the sun's declination, when equal altitudes are used to regulate a clock, or other time-keeper. Communicated by Andrew Ellicott, Esq.

5. Account of an extraordinary flight of Meteors (commonly called shooting-stars). Communicated by Andrew Ellicott, Esq., as extracted from his Journal in a voyage from New-Orleans to Philadelphia.

6. Improved method of projecting and measuring Plane Angles, by Mr. Robert Patterson. Communicated by Mr. Andrew Ellicott.

7. Sur la Theorie des Vents. Par M. Dupont de Nemours.

8. Extracts from a letter from William Dunbar, Esq., of the Natchez, to Thomas Jefferson, &c.

9. Meteorological Observations, made by William Dunbar, Esq., at the Forest, four miles east of the Mississippi, in Lat. $31^{\circ} 28'$ North, and in Long. $91^{\circ} 30'$ West of Greenwich, for the year 1800; with remarks on the state of the winds, weather, vegetation, &c., calculated to give some idea of the climate of that country.

10. Abstract of a communication from Mr. Martin Duralde, relative to fossil bones, &c., of the Country of the Apelousas, west of the Mississippi, to Mr. William Dunbar, of the Natchez, and by him transmitted to the Society.

11. Observations made on a Lunar Eclipse, at the Observatory, in the city of Philadelphia, on the twenty-first of September, 1801, by Messrs. Patterson and Ellicott.

12. On the Hybernation of Swallows, by the late Colonel Antes. Communicated by Dr. Barton.

13. Astronomical Observations made at Lancaster, Pennsylvania, chiefly with a view to ascertain the longitude of that borough, and as a test of the accuracy with which the longitude may be found by lunar observations; in a letter from Andrew Ellicott, to Robert Patterson.

14. Notices of the Natural History of the northerly part of Louisiana, in a letter from Dr. John Watkins, to Dr. Barton.

15. On two species of *Sphex*, inhabiting Virginia and Pennsylvania, and probably extending through the United-States. By B. Henry Latrobe.
16. Memorandum concerning a new vegetable *Muscipula*. By Dr. Barton.
17. On the Process of claying Sugar. By Jonathan Williams, Esq.
18. An Account of some new-discovered Islands or Shoals, in the Indian Seas. By Mr. Thomas, an officer on board the American ship *Ganges*.
19. First Report of B. Henry Latrobe, to the American Philosophical Society, held at Philadelphia; in answer to the enquiry of the Society of Rotterdam, "Whether any, and what, improvements have been made in the construction of Steam-Engines, in America?"
20. Account of the fusion of Strontites, and volatilization of Platinum, and also of a new arrangement of apparatus. Communicated by Robert Hare, junr., member of the Society.
21. An account of a Cock, with two perforations, contrived to obviate the necessity of a vent-peg, in tapping air-tight casks. By Robert Hare, junr.
22. Some account of a New Species of North-American Lizard. By Dr. Barton.

23. Continuation of Astronomical Observations, made at Lancaster, Pennsylvania. In a letter from Andrew Ellicott, Esq. to R. Patterson.

24. Observations and Experiments relating to equivocal, or spontaneous, generation. By Joseph Priestley, LL.D. F. R. S.

25. Observations on the Discovery of Nitre, in Common Salt, which had been frequently mixed with Snow. In a letter to Dr. Wistar, from Joseph Priestley, &c. &c.

26. A Letter on the supposed Fortifications of the Western Country. From Bishop Madison, of Virginia, to Dr. Barton.

27. Supplement to the account of the Dipus Americanus, in the 4th volume of the Transactions of the Society. By Dr. Barton.

28. Hints on the Etymology of certain English Words, and on their affinity to words in the languages of different European, Asiatic, and American (Indian) nations. In a letter from Dr. Barton, to Dr. Thomas Beddoes.

29. Astronomical Observations made by Jose Joaquin de Ferrer, chiefly for the purpose of determining the Geographical Position of various Places in the United-States, and other parts of North-America. Communicated by the Author.

30. Description of the River Mississippi and its Delta, with that of the adjacent parts of Louisiana. By William Dunbar, of the Natchez. Communicated by the Author, a Member of the Society, through the President.

31 Monthly and Annual Results of Meteorological Observations, made by William Dunbar, Esq., at the Forest, four miles east of the River Mississippi, in latitude $31^{\circ} 28'$ north, and longitude $91^{\circ} 30'$ west of Greenwich. Communicated by the Author.

The Society are preparing for publication the Second Part of the above-mentioned volume, which will, in all probability, be put to press early in January next.

AMERICAN PHILOSOPHICAL SOCIETY.

THE thanks of the American Philosophical Society are presented to the following persons, for the *Communications* and *Donations* affixed to their respective names.

JOHN VAUGHAN,
Librarian.

Philadelphia, October 19th, 1804.

COMMUNICATIONS.

A Memoir on the Improvement of Agriculture and the Useful Arts.

By A. Fothergill, M. D.

An Essay on the Precession of the Equinox, signed Julius, and intended for the Magellanic Premium.

An Account of his Temporary Rudder.

By Capt. William Mugford, of Salem, Mass.

An Appendix to his Memoir on the Mississippi,
published in Vol. 6. p. 165. of Transactions.

By William Dunbar, of Natchez.

Meteorological Observations, made by Thos. Glos-
ter, at Warrington, North-Carolina, 1789.

DONATIONS.

FOR THE CABINET.

An Indian Hatchet.

By Major Rivardi.

Specimen of Sulphate of Magnesia, found in Vir-
ginia, in the Cave in which the bones of the Magalo-
nyx were discovered.

By William Hembell.

Various specimens of Gypsum from France and
from Nova-Scotia.

By John Vaughan.

FOR THE LIBRARY.

Modern Geography, digested on a new plan, by
John Pinkerton. Article of America corrected and
enlarged by Dr. Barton. 2 vols. 8vo. and an atlas of
63 maps. Philadelphia: 1804.

Presented by John Conrad & Co., publishers.

American Philosophical Society. 183

The Life of Washington, by John Marshall. 1st
and 2d vols. 8vo. Philadelphia: 1804.

Given by C. P. Wayne, publisher.

The Wars arising out of the French Revolution,
by A. Stevens. 2 vols. 8vo. Philadelphia edition:
1804.

By Bioren and Plowman, publishers.

Juntas Publicas de la Sociedad de los amigos del
Pays de Valencia, from 1799 to 1801. 3 vols. 4to.

By the Society.

The Ninth Volume of the Transactions of the
Historical Society of Massachusetts.

By the Society.

Vocabulary in eight Languages.

By Major Rivardi.

Travels in Turkey, Egypt, &c., by William Witt-
man, M. D. 8vo. Philadelphia: 1804.

By James Humphreys, publisher.

Miscellaneous Works of David Humphreys. 8vo.
New-York: 1804.

By the Author.

Valedictory Discourse, delivered before the Cin-
cinnati of Connecticut, by David Humphreys. 8vo.
Boston.

By the Author.

Papers on Agriculture, published by the Massachusetts Agricultural Society. 8vo. Boston: 1804.
By John Vaughan.

Brathwaite on the utility of the Oxygenated Muriatic Acid in the Scarlet-Fever. 8vo. London: 1804.
By Joshua Gilpin.

Mathematical Correspondent, Nos. 1, 2. 12mo.
New-York: 1804.
By the Proprietors.

Explanation of Hoppe's improved Sextant and Azimuth Compass. London: 1804.
From the Author, by R. Patterson.

Rev. Dr. Valpy's Reply to the British Critic.
London: 1804.
By A. Fothergill, M. D.

Abrége concernant la Cosmologie & la Géologie.
par J. A. de Luc. 8vo. Brunswick: 1803.
From the Author, by Dr. Barton.

Nature Displayed, in her mode of teaching Language to Man, adapted to the French. 2 vols. 8vo.
Philadelphia: 1804.
By N. G. Dufief, the Author.



UNIVERSITY OF PENNSYLVANIA.

THE MEDICAL LECTURES, in this University, commence, annually, in the first week of November, and terminate in the last week of February, or the first week of March.

The present Professors are

1. WILLIAM SHIPPEN, M. D., *Professor of Anatomy, Surgery, and Midwifery:*

2. CASPAR WISTAR, M. D., *Adjunct Professor of Anatomy and Surgery:*

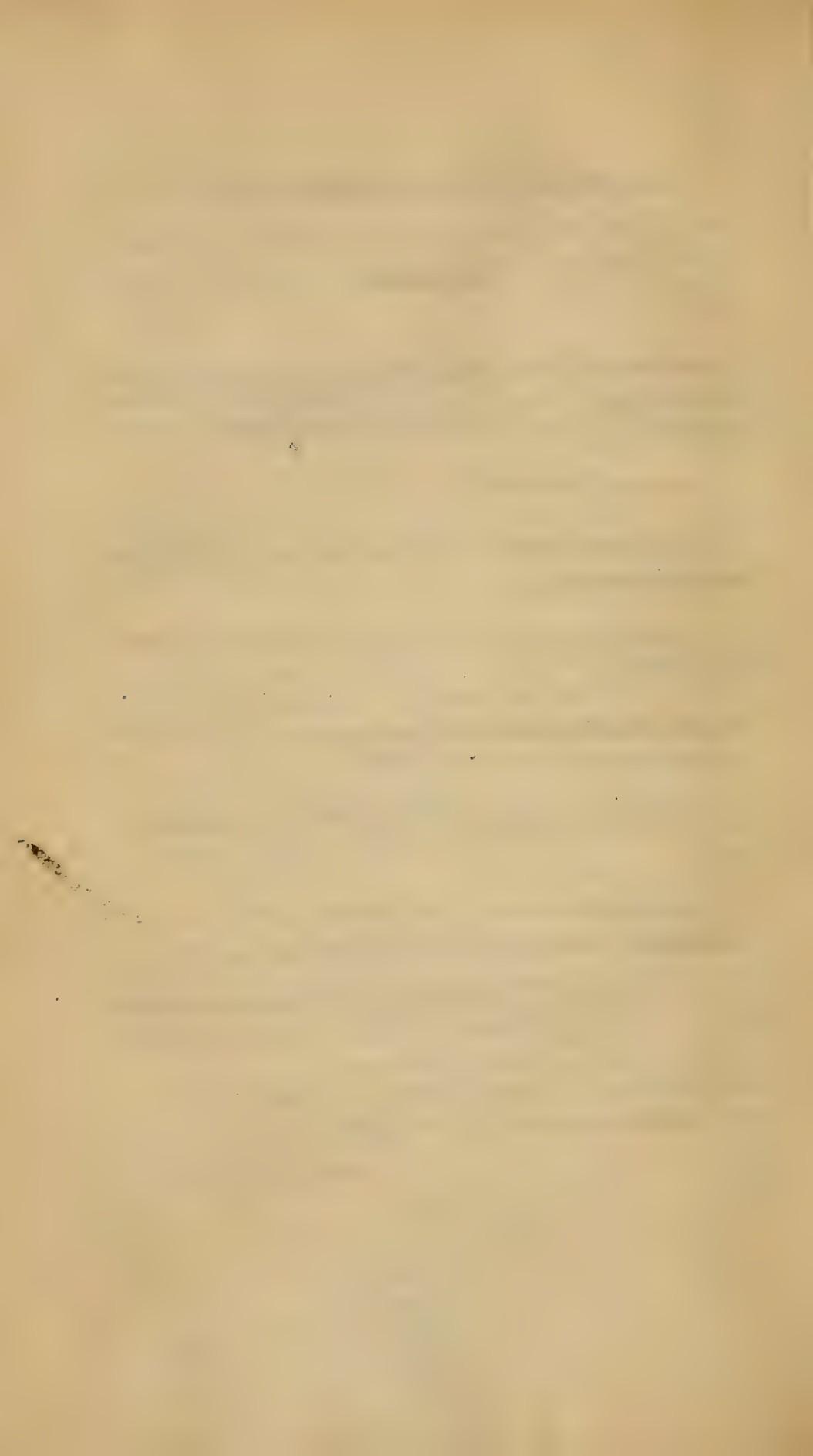
3. BENJAMIN RUSH, M. D., *Professor of the Theory and Practice, and of the Institutes, of Medicine:*

4. JAMES WOODHOUSE, M. D., *Professor of Chemistry:*
and

5. BENJAMIN SMITH BARTON, M. D., *Professor of Materia Medica, Natural History, and Botany.*

N. B. The Professors are preparing for publication, an ample and circumstantial *Account of the Rise, Progress, and Present State of the Medical School of Philadelphia.*

Philadelphia, November 13th, 1804.



THE
PHILADELPHIA
MEDICAL AND PHYSICAL
JOURNAL.

COLLECTED AND ARRANGED
BY BENJAMIN SMITH BARTON, M. D.,
PROFESSOR OF MATERIA MEDICA, NATURAL HISTORY, AND BOTANY,
IN THE UNIVERSITY OF PENNSYLVANIA.

PART II. VOL. I.

1805.



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PRINTED BY T. & G. PALMER, 116, HIGH-STREET.

.....
1805.

DISTRICT OF PENNSYLVANIA TO WIT.

BE it remembered, that, on the twenty-seventh day of February, in the twenty-ninth year of the Independence of the United States of America, John Conrad, of the said district, hath deposited, in this office, the title of a book, the right whereof he claims as proprietor, in the words following, *to wit*, "The Philadelphia Medical and Physical Journal. Part II. Vol. I. Collected and arranged by Benjamin Smith Barton, M. D., Professor of Materia Medica, Natural History, and Botany, in the University of Pennsylvania," in conformity to the Act of the Congress of the United States, entitled, "An act for the encouragement of learning, by securing the copies of Maps, Charts, and Books, to the Authors and Proprietors of such Copies, during the times therein mentioned," and also to the act, entitled, "An act supplementary to an act entitled an act for the encouragement of learning, by securing the copies of Maps, Charts, and Books, to the Authors and Proprietors of such copies, during the times therein mentioned, and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints."

D. CALDWELL,
Clerk of the District of Pennsylvania.

TO DAVID PENNANT, ESQ.,

OF DOWNING, FLINTSHIRE,

GREAT-BRITAIN.

DEAR SIR,

PERMIT me to inscribe the following pages to you, as a small mark of my respect for your literary and private character.

I look back, with real satisfaction, upon the epistolary intercourse which, for some years, subsisted between your late excellent Father and myself. Indeed, I consider the commencement of that intercourse as constituting one of the most pleasurable and important (so far as any thing in my life is important) events of my life. Your Father's letters to me, the flattering manner in which he introduced me to the notice of the Public, were among the most powerful and permanent incitements to my labours, in the study of Natural History. I cannot, then, readily forget his kindness and his friendship; for, in the study of Nature, I have passed much the most happy period of my life; and I flatter myself, that the most happy and most tranquil portion of my remaining days will be connected with the same delightful study, which is, for ever, offering to its votaries something new and useful, especially in this New World, which, to the great retardment of the progress of the different branches of Natural History, has, hitherto, been untrod by the footsteps of a LINNÆUS or a PENNANT.

To me your Father entrusted the task of enlarging the stock of American Zoology. I have to regret, that, hitherto, I have

DEDICATION.

done but little to merit the favourable opinion, which he entertained of me. Should I ever produce any work, in Natural History, worthy of the public notice, some of the value of such work must be traced up to the friendship of the late Mr. Pennant.

I beg you to excuse this vein of egotism. If I have spoken too much of myself, it has been from a desire to speak my real sentiments of your Father, whom I have always considered as the greatest Zoologist his country has produced, and whose memory I cherish with the fondest respect. My egotism, then, you must allow, is not entirely unamiable.

It is one of the objects of the *Philadelphia Medical and Physical Journal* to enlarge the stock of natural history ; and especially of the natural history of the United-States. As yet, the work, still in its infant state, has effected but little in this way. But much will be effected in future ; not, I fear, by any researches of my own, but by the labours of my pupils, and others, who, spreading themselves through one of the most interesting countries upon the face of the earth, are daily interrogating Nature, who is ever willing to answer, and to be understood.

Following the footsteps of your Father, you cannot but feel an interest in whatever relates to the amiable science which we cultivate. With this persuasion, and with a desire to exhibit some public memorial of my friendship for you, I dedicate these pages to you ; and am, with much respect,

Dear Sir,

Your obedient and humble servant, &c.

BENJAMIN SMITH BARTON.

Philadelphia, February 27th,

1805.

ADVERTISEMENT.

IN presenting to the public this Second Part of the *Medical and Physical Journal*, the Editor deems it his duty to acknowledge his obligations to those gentlemen, who have enriched the work with their observations. He solicits a continuance of their future attention; and he will thankfully receive, from the physician, the farmer, and others, in every part of the Union, such facts, experiments, and observations, as may have a tendency to enlarge the stock of MEDICINE, of NATURAL HISTORY, of AGRICULTURE, or of any of the branches of PHYSICAL SCIENCE.

It is hoped, that this Second Part of the *Journal* will be found more interesting than the First. It, certainly, contains some valuable papers, both in a theoretical and practical point of view. From this character, the Editor would always be understood to except his own immature productions.

Of the papers published in the First Section of the work, two had previously appeared in print: viz. the “ Account of the Native American, or Indian Dogs,” which was originally communicated to Mr. Tilloch, who published it in his excellent *Philosophical Magazine*; and Mr. Toulmin’s paper on the (supposed) Welch-Indians. Some apology may, perhaps, be thought necessary for the introduction of these papers into the *Journal*.

With respect to the first, it is principally republished from the Editor’s desire to receive such additional information on the subject, as he knows it is in the power of many of his correspondents, and others, to communicate to him: for this paper is intended to form a part of a large work, on the Zoology of the United-States. It may be added, that although this paper has been printed before its introduction into the *Journal*, it has been but little seen in America, where the *Philosophical Magazine*, which is published in London, is but sparingly circulated, and much less known than it ought to be.

As to Mr. Toulmin’s paper, its fate appeared very precarious, so long as it was entirely confined to the periodical works (however respect-

able), in which it originally appeared. But this paper is not republished without some additional matter.

Several papers, which were intended for this part of the *Journal*, are unavoidably delayed for future numbers. Among others, the Editor would particularly mention an Essay on "American Horticulture," abounding in practical matter, of considerable value. This is the production of an intelligent (indeed philosophic) farmer, whose communications will always be acceptable to the Editor. Some additional observations on different species of *Tilia*, or Lime-tree, are also delayed.

This part of the *Journal* contains no *Biographical* articles. But the next number, it is hoped, will make amends for this deficiency, by communicating some interesting information respecting two distinguished cultivators of science, in America, of whom little else has, hitherto, been published, than the dates of their deaths, and the titles of their works.

No section is set apart for MISCELLANEOUS FACTS AND OBSERVATIONS, in this number; but such a section will be given in the next number of the *Journal*, which will be published early in September next.

THE
PHILADELPHIA
MEDICAL AND PHYSICAL JOURNAL.

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SECTION FIRST.

VOL. I. PART II. A

THE
PHILADELPHIA
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I. *Some account of the different species and varieties of native American, or Indian Dogs. By the EDITOR.*

IT would require much observation, many experiments, and a great deal of time, to collect all the necessary materials for an exact history of the Native Dogs of North-America. I am by no means prepared for the ample task. My object, in the present article, is much more limited : to bring together a number of scattered facts relative to the origin and manners of the different kinds of dogs which were found among the Indians, when the Europeans first took possession of the countries of North-America. In the investigation of this inquiry, I cannot pretend to be very methodical. Nor do I expect to avoid errors. I aim, however, at correcting some of the errors of preceding writers.

It has been asserted, by many historians and naturalists, that there were no dogs in America, prior to

the discovery of this portion of the world by the Europeans*. Mr. Pennant, one of these naturalists, remarks, "as it is certain that the dog of North-America, or rather its substitute, on its first discovery by the English, was derived from the wolf, tamed and domesticated, so it is reasonable to imagine that of South-America had the same origin†." I do not think it sufficiently ascertained, that there were not originally, in America, any species of dog of the same stock as those of the old world. It has not yet been proved, that the dog of Newfoundland, of which I am afterwards to make more particular mention, was unknown in that island, before its discovery by the Europeans. But admitting that the Newfoundland species or variety originated from an admixture of the European dog with the wolf, or some other native animal of the country, it will still appear somewhat probable, that the Indian dogs, in many other parts of America, were not *specifically* different from those of the old world. This question is well worthy of the attention of the naturalist, and is even entitled to the notice of the civil historian of the new world.

TECHICHI, OR ALCO.

In Mexico and in South-America, there was a small species of dog, which the Mexicans called *Techichi*, and the Peruvians, *Allco*, or *Alco*. This is

* Acosta, Gomara, Herrera, Joannes Fabri, Buffon, Pennant, &c., &c.

† History of Quadrupeds. Vol. i. p. 237.

particularly mentioned by the Jesuit Joseph Acosta*, and other of the earlier visitors of America. The *Alco* had a melancholy aspect, and was perfectly mute, or dumb. Hernandez speaks of it as being similar, in nature and manners, to the common dogs of Europe, and not very different in form†. It is remarkable that Linnæus has taken no notice of this species, though he so frequently refers to the work of Hernandez. Mr. de Buffon has confounded it with the *Itzcuintepotzotli*, or next species, from which, however, it appears to have been distinct‡. Gmelin, who has fallen into a similar mistake (though the words of Hernandez are sufficiently plain), considers the *Alco* as a variety of the *Canis familiaris*, or faithful dog. He calls it *Canus familiaris, Americanus*. Although I have little doubt, that the *Alco* was a true canis||, I think it is too slightly mentioned or des-

* The Naturall and Morall Historie of the East and West-Indies, &c., p. 301, 302. English translation. London: 1604.

† Historiæ Animalium et Mineralium Novæ Hispaniæ Liber Unicus, &c., p. 6, 7.

‡ Histoire Naturelle, &c., tom. xxx. p. 200, &c.

|| Independent of the testimony of Hernandez, there would seem to be very little doubt, that the *alco* was a true species of *canis*, and, indeed, very similar to some of our small house-dogs. The Spaniards, according to Clavigero, gave it the name of *Perro*, which signifies a dog; and Acosto observes, that the Indians called all the dogs which were brought from Spain, *Alco*, from the resemblance between them and their native animal. It is probable, that the Indians in some parts of South-America had afterwards (perhaps when the *alco* became either very rare, or extinct) adopted the Spanish word *Pero*, for dog. The Jaioi (in Guiana) used this word, at least as early as 1633. De Laet's Novus Orbis, p. 643.

cribed to enable us to determine, with as much certainty as the naturalist could wish, whether it was merely a variety of the common dog, or an entirely distinct species. It is to be regretted, indeed, that the naturalists who visited America in the sixteenth century, whilst the alco was still a common animal, have left us so much in the dark concerning its origin and nature. Owing to their negligence, we are, at this distance of time, only permitted to say, with some degree of probability, what it was not. I do not, with Mr. Pennant, think it probable, that it was derived from the wolf. Its entire muteness is, I think, greatly opposed to this idea; as is also, perhaps, its complete domestication. If it were immediately derived from the wolf, we ought, at least, to allow the Americans some share of merit for the successful pains they had taken to reclaim this animal from the wild ferocity of his nature.

This species or variety of dog appears to have been pretty extensively diffused through the southern parts of the continent of America, and, certainly, existed in some of the islands, when they were first discovered by Columbus. Peter Martyr, and after him other historians, mentions the discovery of mute little dogs in the island of Juanna, in 1492. Martyr says they were deformed in shape, and that the savages ate of them, as the Europeans did of goats*. I cannot find that this species was discovered among any

* The Decades of the Newe Worlde or West-India, &c. The first decade. p. 15. English translation. London: 1555. 4to.

of the Indian tribes inhabiting the tract of country now called the United-States. It is not *certain*, indeed, that the dogs which Soto found in Florida were not of the alco-kind: I think it highly probable, however, that they were not, but that they were much more allied to the wolf and fox, like the modern Creek dogs, which I am afterwards to mention.

It would appear from Clavigero, that the alco is now entirely extinct. "After the conquest of Mexico," says this author, "the Spaniards, having neither large cattle nor sheep, provided their markets with this quadruped; by which means the species was soon extinct, although it had been very numerous*."

ITZCUINTEPOTZOTLI.

The *Itzcuintepotzotli* was the Mexican name for another species or variety of dog, which is figured and described by Fabrit̄, and by Clavigero, whose figure is borrowed from that of the Italian naturalist. If the figure be an accurate one, the animal must have been of a very deformed aspect; and as such, indeed, it is described. It was about the size of a Maltesan dog, or rather larger. The head was very small, the ears pendulous, and the eyes soft and pleasing. The nose had a considerable prominence in the middle, and its tail was very small. But the most striking feature of the animal was a protuberance upon its back, not unlike that upon the Arabian

* The History of Mexico. Vol. i. p. 40.

† Rerum Medicarum Novae Hispaniae Thesaurus, &c. p. 466, &c.

camel. The skin was varied with white, tawny, and black.

This species particularly abounded in the kingdom of Michuacan, the most westerly part of the old empire of Anahuac. The natives of Michuacan call it *Abora*, or *Abora*. It is said, by Clavigero, to be almost wholly extinct*.

The *Itzcuintepotzotli* bears no resemblance whatever to the wolf, from which it is not probable that it was derived. It has much more the aspect of some of the domesticated dogs; and Hernandez informs us, that it resembled them in nature and in manners. That it was a species of *Canis* is very probable; but that it was a mere variety of the common dog is much more uncertain. I rather suspect it was not. We are not, indeed, permitted to decide this matter with certainty. One essential difference between the two animals we are able to collect. The Mexican dog is said to have six teats, whereas the common dog has ten.

Buston, Pennant, and Gmelin, have confounded this animal with the alco. Hernandez, however, plainly speaks of them as two distinct animals†, as does also the Abbe Clavigero‡. It is probable, however, that they were considerably allied to each other.

* The History of Mexico. Vol. i. p. 44.

† Historia Animalium, &c. Liber Unicus. p. 7.

‡ The History of Mexico. Vol. ii. p. 282, and p. 323.

Either this species or the *Techichi*, perhaps both, were brought to the market of the city of Mexico, along with deer, rabbits, and many other animals, before the conquest of the Spaniards. Gage says these animals were sold either " by quarters or whole." It would appear from the same writer, that these dogs were sometimes castrated for food*. These simple facts are calculated, with many others, to show, that the Mexicans, at the time they were discovered, had actually advanced, in many respects, towards the attainment of that police, those arts and practices, which are never observed among people in the savage forms of society. Another century, but for the discovery of Columbus, would have conducted these unfortunate Americans much nearer to the condition of their conquerors ; but it is to be feared, that many centuries would have been requisite to have weaned them from their hideous religion, which was the foundation of their savage practices and manners. The history of mankind exhibits abundant proofs of this position, that the arts which they practise, and the police which they observe, are no certain evidences of a truly civilized state. A MILD RELIGION appears to be absolutely necessary to the attainment and the preservation of this happy state of man.

* *A New Survey, &c.* p. 111.

WOLF-DOGS.

We know not whether the *Techichi* and the *Itzcuintepotzoili* were found in any of the countries considerably to the north of Mexico. We are well assured, however, that different kinds of dogs were very common in many of the countries of North-America, when this continent was first discovered by the Europeans, in the sixteenth and seventeenth centuries. I am even inclined to think, that North-America was much better supplied with dogs (I mean these animals in the domesticated state) than South-America and Mexico. There seems to be little doubt, that in the northern countries there was a greater variety than in the southern countries. Florida abounded in these animals. When Fernando de Soto marched his army through that country, in the year 1540, the Indians supplied him with great numbers of dogs. On one occasion, an Indian cacique sent the Spanish general no less than three hundred dogs*. These were eaten by the Spaniards, who deemed them not inferior to the best of sheep†. But we are informed, that the Indians did not eat them‡. It would seem, that the Spaniards did not

* This was the cacique of Quaxule, which, if we can depend upon the old maps of Florida, was in the country of the Chikkasah-Indians. A Relation of the Invasion and Conquest of Florida, &c., &c. p. 71.

† See a Relation, &c. p. 55.

‡ A Relation, &c. p. 71. I do not think it certain, that the Indians did not eat their dogs. The present which Soto received

always stand upon the ceremony of waiting to have the dogs presented to them. The Portuguese author of Elvas, who accompanied Soto and his successor in their mad ramble, informs us, that during the time the army laboured under a scarcity of meat, “ he who could catch a dog in any village, thought himself a very happy man ; for sometimes, he observes, we found thirty in a place, but the soldier that killed one, and sent not a quarter to his captain, suffered for it, paying dear for his incivilities, when he was to go sentinel, or upon any guard of fatigue*.”

We are not told what kind of dog it was that the Spaniards found among these Indians. There do not appear to be good grounds to suspect, that they were of the *Alco* or *Itzcuintepotzotli* kinds. It is certain, that neither of these animals is now known among any of the Floridian Indians ; and it does not seem likely that the breeds which these Indians at present possess, have been reclaimed from the wild state, since the time of Soto’s “ mad adventures.”

at Ocute, in the country of the Creek-Indians, rather favours the opinion that they did. The cacique sent the Spanish general “ two thousand Indians, with a present of rabbits, partridges, maes-bread, two pullets, and a great many dogs.” *A Relation, &c.* p. 55. If the Indians did not eat their dogs, why did they suppose the Spaniards were fond of them ? It is true there was a great scarcity of meat and salt at Ocute, and the Indians may have supposed, that any kind of food would be acceptable to an army of hungry men. Besides, it is probable, they had many opportunities of seeing the Spaniards employed in stealing their dogs.

* *A Relation, &c.* p. 56.

The dogs which are now in use among the Creeks, Chikkasah, and other southern tribes, are of different kinds. As far as I have been able to collect information concerning them, they, in general, bear a very strong family resemblance to the wolf. One kind is very similar to the *Canis Lycaon*, or black wolf. It is not, however, always black, but of different colours, commonly of a bay colour, and about one third less than the wild black wolf. It carries its ears almost erect, and has the same wild and sly look that the wolf has*.

The other kind of dog is smaller than the one just mentioned, and is more like the common red fox. Both kinds bark, but not so much as the common dogs, and their bark is different from that of our dogs, being more nearly allied to the howl of the wolf†.

I am unable to say, with certainty, whether these southern dogs differ very essentially from those among the northern Indians. I rather suppose they do not. I know, at least, that among the latter, as well as among the former, there are two species or varieties, one which has generally been considered as

* From the information of Mr. William Bartram.

† I have been informed, that among the Cheerake-Indians, the dogs are of a more mixed breed, more like those of the whites. This is, doubtless, owing to the greater intercourse which has subsisted between these Indians and the whites. The Cheerake themselves are so much mixed with the Europeans, that they are often named by the traders, the "Breeds."

the wolf merely altered by the domesticated state, and the other more allied to the fox. But as my information concerning the northern dog is more correct and particular than it is concerning the southern, I wish to be understood as speaking principally of the former, in the following description of the Indian dogs.

The Indian dog (I mean that which is most allied to the wolf) is frequently called, by the traders and others, "the half-wolf-breed." His general aspect is much more that of the wolf than of the common domesticated dogs. His body, in general, is more slender than that of our dogs. He is remarkably small behind. His ears do not hang like those of our dogs, but stand erect, and are large and sharp-pointed. He has a long, small snout, and very sharp nose*. His barking is more like the howling of the wolf. When attacked, and when fighting, he does not shake his antagonist, like our dogs. His teeth are very sharp, and his bite sure. When he snarls, which he is wont to do upon the slightest occasion, he draws the skin from his mouth back, presenting all his teeth to view. Our dogs, when once attacked by these Indian dogs, always fear and shun them. It is a very curious circumstance, that the Indian dog will never attack or pursue the wolf, which the common dogs so readily do. This fact seems to point very strongly to the origin of the American animal. For the pur-

* Some persons inform me, that many of the Indian dogs have a large white spot upon the breast.

poses of hunting, the Indian dogs are very useful; but in other respects, they are by no means so docile as the common dogs. They have less fidelity; for though never so well fed, they will steal from their masters*. In short, every thing shows, that the Indian dog is a much more savage, or imperfectly reclaimed animal, than the common dog.

If my information has been correct, this species or breed is still preserved in the greatest purity among the Six-Nations, from whom the Delawares acknowledge that they received it. The Delawares call this dog, *Lenchum*, or *Lenni-Chum*, which signifies “the original beast.” The Nantikokes call him, *Ihnwallum*. The Mahicans, *Annun-neen-Dee-a-oo*, or “the original dog,” to distinguish him from our common dogs, which they call simply *Dee-a-oo*, or *De-a-oo*.

These appellations show, that the Indians consider their wolf-dog as a *native* of the country, and that they are not incapable of discerning the differences between this animal and the greater number of the varieties of dogs which have been introduced into America, by the Europeans.

The origin of the Indian dog is a question of much more difficulty than some naturalists have imagined.

* This assertion, I must confess, is opposed by the testimony of some writers. Thus Carver says, the Indian dogs are “remarkable for their fidelity to their masters; but being ill-fed by them, are very troublesome in their huts or tents.” Travels, &c. p. 416.

Thus, Mr. Lawson seems to suppose, that the dogs which he saw, among the Indians of North-Carolina, were merely wolves, “ made tame with starving and beating*.” This is easy natural history. Mr. Pennant, as we have already seen, supposed that the dog of North-America was derived from the wolf, tamed and domesticated†. This opinion has been maintained by other writers. But it is an opinion which must be admitted with some limitation. I am, indeed, much inclined to believe, that the Indian dog, in many parts of North-America, was derived from the wolf; but it remains to be proved, that it is, in any part of the continent, the pure or *unmixed* wolf, in a state of domestication. It is, more probably, a hybrid animal, begotten between the wolf and some other animal, perhaps the fox. Mr. Josselyn, a long time ago, considered the dog of the New-England Indians as the produce of the wolf and fox‡. This is also the opinion of many well-informed persons, who have resided among, or visited, the Indians. I believe it is the opinion which many of the Indians themselves entertain concerning the origin of their dog.

I have already observed, that the Indian dog is sometimes called “ the half-wolf-breed.” This plainly shows, that those who have imposed this name

* A New Voyage, &c. p. 38.

† See page 4.

‡ “ The Indian Dog is a creature begotten ‘twixt a wolf and a fox, which the Indians lighting upon, bring up to hunt the deer with.” Josselyn’s New-England’s Rarities, &c. p. 15.

did not view the American dog as a mere domesticated wolf. In other words, it shows, that they considered him as a hybrid animal. I may add, that Carver and other writers, who have enjoyed pretty extensive opportunities of observing the dogs of the Indians, merely speak of their *resemblance* to the wolf, without pretending to assert, that they are only domesticated wolves*.

Owing, however, to the great affinity which subsists between the Indian dog and the wolf, the savages, in some parts of North-America, bestowed the same name upon both of these animals. Thus, Father Hennepin expressly informs us, that *Chonga* is a dog or wolf, in the language of the Issati and Naudowessies. In general, however, the Indians apply different names to the wolf and to the dog, whether it be their own (or native) dog, or those varieties which they have received from the Whites. (*See the list of the Indian names of the wolf, and of the dog, in this article.*) I may add, that the Indians seem also to have remarked the resemblance of some of their dogs to the fox. For the Mohawks (or at least the Cochnewagoes, who have sprung from the Mohawks) call the red-fox, *Cheets-hoo*. Now the Tuscaroras, who speak a dialect of the language of the Mohawks, call a dog, *Cheeth* and *Cheetht*. Much dependence, however, should not be placed upon this application of

* "The dogs employed by the Indians in hunting, appear to be all of the same species; they carry their ears erect, and greatly resemble a wolf about the head." These are Carver's words. See his *Travels, &c.* p. 416.

names. For savages sometimes bestow the same names upon species that are, unquestionably, distinct.

We are not yet prepared, it is obvious, to give an exact genealogical history of the Indian dog. We are compelled to mix conjecture with fact. The anatomical structure of the animal should be examined. But whatever may have been the origin of this breed of dogs, I am disposed to think, with Josselyn, that the savages found it in the woods, and that it has existed as a distinct species, or breed, for a very long period of time. Several of the earlier visitors of different parts of North-America speak of the existence of wild dogs in the country. Renatus Laudonerius invaded Florida in the year 1564, only a few years after the death of Soto. In his enumeration of the native productions of the country, he mentions wild dogs. There is no reason to suppose that he has confounded them with the wolves. For he expressly says, that the country produced, beside these dogs, some species of wolves*.

The discoverers of the island of Cape-Breton, in the Gulf of St. Lawrence, found in that island black dogs, which we are informed, the Indians were very careful to bring up to hunting.† I think it probable, that both these and the dogs mentioned by Laudonerius, were the same as the half-wolf-breed, which I have described.

* See De Laet's *Novus Orbis*, lib. iv. p. 215.

† See the same, lib. ii. p. 37.

It is highly probable, that the Indian dog still exists, in a wild state, in the woods of many parts of North-America. It is likely that when seen, he has been sometimes mistaken for the wolf.

A very intelligent Indian informed me, that, in the year 1792, when travelling towards the head-waters of the river Miami, which empties into Lake-Erie, he had met with wolves which barked like dogs, though, in other respects, they appeared to be little different from wolves. Perhaps, future researches will show, that these were the real Indian dogs, in their wild state. The subject is worthy of farther inquiry. If the Indian dog be a hybrid animal, we ought to suppose that he is less common in the woods, than the animals from whom he is sprung. Hybrids are, in general, more rare than *original* species. This observation applies both to the animal and to the vegetable world.

The late Mr. Peter Kalm informed Mr. John Bartram, that the dogs which he saw among the Indians of Canada, "were just like the dogs in Sweden, and that they had ears sharp-pointed, and standing upright like a wolf's." "I can remember perfectly well," continues Mr. Bartram, "that when I was a boy, the Indians came frequently to our house. Their dogs had sharp-pointed upright ears, and we used to think that they were of the wolf-breed. Now, whether the Indians had their dogs from the Swedes, who settled in Pennsylvania long before the English settled there, or whether the Indian dogs were na-

tives of North-America, and the same kind as those in the north of Europe and Asia, is well worth enquiring*.”

The fact mentioned by Kalm, and the hint suggested by Mr. Bartram, have sometimes, for a moment, led me to believe, that the wolf-like dog of the northern Indians may have been received from the Swedes, who formed a settlement in Pennsylvania, early in the seventeenth century. But a little consideration has compelled me to relinquish this idea. For it is certain, that the Indians were in possession of this breed of dogs, long before the arrival of the Swedes in America.

We have already seen, that the Spaniards found domesticated dogs among the Indians of Florida, before the middle of the sixteenth century, almost one hundred years earlier than the Swedish settlement in Pennsylvania. It is not, indeed, certain, that these dogs were of the half-wolf-breed. But it is probable that they were. In the year 1585, the celebrated navigator, Captain John Davis, observed dogs “with pricked ears,” in the lands about Hudson’s Bay†. It is highly probable that these dogs were a variety of the half-wolf-breed of the Indians. Captain John Smith, who arrived in Virginia in 1607, a few years before the Swedish settlement, expressly mentions

* A letter in my possession (dated January 27th, 1757) from Mr. John Bartram to Mr. George Edwards.

† Forster.

the affinity of the Indian dogs, in that country, to wolves. I might easily adduce other instances. These are sufficient for my purpose. They evidently show, that the Indian dog existed in America before the Swedes planted their first colony in Pennsylvania. Consequently, we have no difficulty in answering Mr. Bartram's first question, which I have stated.

Still, however, Kalm's observation is interesting. It leads us to suspect, that the dog of the Indians is common to North-America and to the northern parts of Europe. Neither should this circumstance, in whatever light we may view the original of the Indian dog, excite our surprise. If, as very many of the traders and others suppose, this dog is the produce of the wolf and the common fox, his parents existed in the old as well as in the new world. He may have been formed in America by the union of these two animals; or he may have migrated into America from Europe, along with many other animals, which, it is highly probable, owe their original to that portion of the globe, or to Asia. For that America has received some of its animals (beside its human inhabitants) from Asia and from Europe, I have very little doubt*.

I conjecture it will be found, that the dog of the Greenlanders mentioned by Crantz†, and other wri-

* See *New Views, &c.* Preliminary Discourse, p. 101, 102.

† *The History of Greenland, &c.* Vol. i. p. 74. English translation. London: 1767. "The Greenlanders (says this author) have no tame beasts but dogs of a middle size, which look more like wolves than dogs. Most of them are white, yet there are

ters, is only a variety of the Indian dog. And, perhaps, the dogs of the Kalmuck-Tartars, which are said to have a great resemblance to the jackal, or schakal, will also prove to be of the same breed. But, with me, these must remain, for some time, mere conjectures. For I am incapable of giving such a minute description of the external and internal appearance of the Indian dog, as would enable the naturalists of Europe to decide a question, not the least curious in the zoology of the new world. In another work, I hope to be able to give a much more complete account of this animal, than that which I now communicate to the public.

I have said, that the Indian dog is a much more savage or unreclaimed animal than the common dog, which has been introduced into America from Europe*. This circumstance has not escaped the notice of some preceding writers. But I know of no writer who has deduced from it so important a conclusion as Mr. Zimmermann has done. This truly learned naturalist, after remarking that the Europeans who have visited America, have considered the Indian dogs merely as tamed wolves, proceeds to deduce the conclusion, that neither America itself, nor its inhabitants, are so ancient as the countries or the people of other parts of the world†.

some with thick black hair. They don't bark, but growl and howl so much the more."

* See page 14.

† Specimen, &c. p. 91.

This conclusion proceeds upon the notion, so ingeniously defended by Mr. Zimmermann, that the dog of the old world is merely the wolf reduced to a state of domestication, and varied, both as to his external aspect, and as to his essential qualities or manners, by the influence of climate and other physical causes, during the term of some thousand years*. This subject is worthy of some of our attention. I regret, however, that, in this place, I can only touch it in the most superficial manner. This I shall do under the following seven heads.

I. I may observe, in the first place, that it is by no means probable, that the wolf is the sole parent or original stock, from whence have proceeded all the numerous varieties of animals which go under the general appellation of dogs. I think it much more probable, that these varieties are derived from several different stocks, or sources, beside the wolf; such as the jackal, the hyæna, different kinds of foxes, &c. &c. In their inquiries into the genealogical history of the dog-kind, naturalists, by aiming at simplicity, have only tended to involve the subject in confusion. A comparative view of the internal structure of the supposed parents of the dog-kind, and the dogs, has been too much neglected. Some attention, however, has been paid to this subject. Essential differences between the structure of the wolf and the dogs (I

* The whole of Mr. Zimmermann's inquiry into the origin, &c. of the dog-kind, is well worthy of the attention of the naturalist. See Specimen, &c. sect. iii. p. 83—98. .

mean the common dogs of the old world, for I know not that any anatomist has hitherto inspected the structure of the Indian dog of America) have been discovered: differences so essential, that I think they forbid the idea, that the wolf and the dog are one and the same species. I do not, however, deny, that the pure, unmixed wolf has, in some countries, been reduced to the domestic state of the dog. But I think it more probable, that even those dogs, which are most nearly allied to the wolf, are hybrids, begotten between this animal and some other species of the genus.

II. From their agreement in internal structure, it is much more probable, that the jackal, or schakal (the *Canis aureus*), is one of the principal original stocks of the dogs of the old world. Professor Gueldenstaedt has remarked, that the *cæcum* of the jackal “entirely agrees in form with that of a dog, and differs from that of the wolf and fox.” “I may add,” says Mr. Pennant, whose words I have been using, “that there is the same agreement in the teeth with those of a dog; and the same variation in them from those of the two other animals*.” Moreover, in his manners, the common dog is much more allied to the jackal than he is to the wolf, or to any other animal with which we are acquainted. If, then, this animal, and not the wolf, be the principal parent of the dog-kind, the speculations of Mr. Zimmermann ought to have little weight in establishing the

* *History of Quadrupeds.* Vol. i. p. 262.

position, that the continents of America are a new creation, and their inhabitants new possessors of the soil. For, I think the form of the Indian dog is very considerably remote from that of the jackal, which is not known to exist in any part of America.

III. In order completely to establish his opinion, Mr. Zimmermann should have proved, that the dog is certainly derived from the wolf. I have just endeavoured to render it probable, that the wolf is not the parent of the dogs of the old world; and I formerly* gave some reasons for believing, that the Indian dog of America, notwithstanding the conjectures of Lawson and other writers, is not the pure, unmixed wolf, but a hybrid, begotten between this and some other animal.

IV. But in the old world, there are dogs not, perhaps, more completely domesticated, or, in other words, not more thoroughly deprived of their savage aspect and manners, than are the dogs of North-America. Such are the dogs of the Kalmuck-Tartars. And who, that attentively considers the history of the country in which the Kalmucks reside, will believe that that country is a new creation? Who will venture to conjecture, that the Kalmucks themselves are a new people? Moreover, Kalm's observation would lead us to believe, that the Indian dogs are the same (and of course not more savage) as some of the dogs in the north of Europe.

* See page 15.

V. Some animals are very easily brought into the domesticated state. Others are domesticated with great difficulty. Perhaps, there are some incapable of domestication. If the Indian dog be the offspring of the wolf and the fox, or any other animal, we ought not, perhaps, to wonder, that he is still more an *animal sylvestre* than the generality of the dogs of the old world: for both the wolf and the fox are with difficulty tamed. In this inquiry, we ought also to remember, that the master of the Indian dog is a savage. It may readily be conceived, that this circumstance will influence the genius of our animal. Living in the woods, and too frequently badly treated by his master, the dog must often leave the huts of the Indians, and perhaps imbibe from his parents, in the woods, a new tincture of their aspect, and their manners. Even in our cultivated towns, how much do the manners of the dogs seem to depend upon the calling of their masters! It is a fact, that the dogs of our frontier-settlers have a much more savage aspect than the dogs (the same variety) in the villages and populous towns.

VI. In America there were found some kinds of dogs, which were not less domesticated than the dogs of the old world. Such were the *Alco* and the *Itzcuintepotzotli*, of which I have already given some account. I think it very improbable, that these two species or varieties were derived from the wolf. Nor is it certain, that they were not a species of canis, essentially distinct from those of the old world. In whatever light we view them, they seem to oppose an

objection to Mr. Zimmermann's notion concerning the recent creation of America, and the recent population of this great portion of the globe. Could it be proved, that the *Alco* and the *Itzcuintepotzotli* have sprung from the wolf, it would be natural to infer, that an immense period of time had elapsed before these animals could have been brought into the mild, domesticated state, in which the discoverers of America found them.

VII. And lastly. This is not the place to inquire into the period of the population of America. I have touched upon this question in another work*, and shall examine it more fully in a work in which I have long been engaged. Here, however, I may observe, that many circumstances forbid the idea, that America is a new creation, recently emerged from the influence of the ocean. And circumstances, impressive in their nature, render it extremely probable, that many of the nations of America have resided in this portion of the world for some thousand years. Trying them by their languages, the Americans will appear to be children of the earliest human families, of which history, or the traditions of mankind, have preserved any memorials.

Among the almost innumerable charges which have been brought against the Indian inhabitants of America, there is one, which it becomes the historian of Indian dogs to take some notice of. The Indians

* New Views, &c. Preliminary Discourse, p. 104—109.

are accused of great severity or cruelty in the treatment of their dogs. Mr. Lawson says, the savages are the “worst dog-masters in the world, so that it is an infallible cure for sore-eyes, ever to see an Indian’s dog fat*.” I have already made mention of this respectable traveller’s notion of the process by which he supposed wolves are turned into dogs†. The faithful Father Charlevoix says, the Indians feed their dogs “but poorly, and never fondle them‡.” Carver, who so frequently borrows from Charlevoix, says nearly the same thing||. It is even said, that, owing to their scanty allowance of food, the Indian dogs are often so weak, that they are obliged to lean against a tree, or some other prop, whilst they bark.

It is well known, how much ingenuity, eloquence, and science have, within the last fifty years, been employed to represent the Americans as the degenerated, or imperfectly organized, children of the earth. To complete the large volume of calumny against these poor people, even the manner in which they treat their dogs is not suffered to pass unnoticed by the historians of the new world. “Prior to their intercourse with the people of Europe,” says the eloquent Dr. Robertson, “the North-Americans had some¶

* A New Voyage, &c. p. 38.

† See page 15.

‡ A Voyage to North-America, &c. Vol. i. p. 79.

|| Travels, &c. p. 416.

¶ They had many tame dogs. The liberality with which the Indians supplied Soto’s men, and the facility with which the men supplied themselves, with dogs, leave us no room to doubt, that tame dogs abounded in Florida.

tame dogs, which accompanied them in their hunting excursions, and served them with all the ardour and fidelity* peculiar to the species. But, instead of that fond attachment which the hunter naturally feels towards those useful companions of his toils, they re- quite their services with neglect, seldom feed, and never caress them†.”

It would, I believe, be a much easier task to prove, that Dr. Robertson was unqualified to write the history of America; to prove that the Indian-Americans are not the inferiors of the people of the old world, in the measure of their intellectual endowments; and to show, that more than one half of the charges which have been brought against these people, are charges resulting from ignorance, or from systematic zeal, than to prove, that the Indians are peculiarly entitled to the character of kind and tender dog-masters. After some attention to this subject, I must candidly confess, that I possess not materials for a satisfying defence of the Indian. The charges which have been brought against him, by the writers whom I have mentioned, will be convictive. But why, in this inquiry, if the historian will condescend to mention the fact, and to interweave it with his eloquence, should he forget the hardships of the savage life? Where the master labours under a scarcity of food, his servants, the animals which depend upon him for their

* Their fidelity has been called in question. See page 14.

† *The History of America.* Vol. ii. p. 216, 217, London: 1788.

subsistence, must share in the hardships and the evils of his state. The miserable condition of the Indian dogs is a necessary result of the miserable condition of the Indians themselves. This is certain; though the Indians tell us, that they keep their dogs poor, that they may be light and nimble, and therefore the better fitted for the purposes of hunting.

Dr. Robertson, however, might have found, in the writings of some of the authors whom he has repeatedly quoted, mention made of the tenderness which the Indians manifested towards their dogs, in some parts of America. The following passage in Acosta should not have escaped the historian's notice. Speaking of the *Alco*, the learned Jesuit says, “The Indians doe so love these little dogges, that they will spare their meate to feede them, so as when they travell in the countrie, they carrie them with them upon their shoulders, or in their bosomes, and when they are sicke, they keepe them with them, without any use, but only for company*.” Hence, it appears, that of one species or variety of their dogs, the Indians, in some parts of the new world, were peculiarly careful, and even solicitously tender.



The Wunaumech-Indians call the dog *Allum*, *Al-loom*, *Mo-e-kan-neb*, and *Mé-kan-ne*: the Monsces, *Al-lúm*: the Mahicans, *Dee-a-oo*, *De-a-oo*, and *An-*

* The Naturall and Morall Historie, &c. p. 301, 302.

nun-neen-Dee-a-oo: the Chippewas, *A-lim*, *Anu-mosch*: the Messisaugers, *An-nee-moosh*: the Ottawas, *An-nee-moo-kau-che*: the Indians of Penobscot and St. John's, *Allomoose*: the Natices, *Anum*: the Narragansets, *Alum*: the Miamis, *Aul-la-mo*: the Wiahtanah, *Lemah?* the Pottawatameh, *An-nee-moosh*: the Shawnees, *Wissi*, *Wee-seh*: the Kaskaskias, *Remoab*: the Nanticokes, *Alum*, and *Ibnwállum*: the Mohawks, *Abgarijoo?* *Er-bar?* the Cochnewagoes, *Er-bar*: the Oneidas, *Er-bar*, *Ale-haul*, *Ale-ball*: the Onondagos, *Tschierba*: the Cayugas, *Sowaus*: the Senecas, *Chee-aab*, and *Che-eh*: the Tuscaroras, *Cheeth*, *Cheethth*: the Wyandots, *Nee-a-nooh*: the Sioux, *Shún-gau*, *Chonga*, *Shun-gush*: the Osages, *Shong-eb*: the Cheerake, *Keera*, *Keethlab*, *Keeth-legth*: the Greeks, *Ee-fa*, *E-fah*, *Ef-fa*: the Chickasah, *O-phe*, *Oo-phe*: the Choctah, *O-phe*: the Katahba, *Taunt-sce*, *Taunsee*, *Tase*: the Woccrons, *Taub-be*: the Natchez, *Worse*: the Mexicans, *Chichi*: the Poconchi, *Tsi*: and the Chilese, *Tewa*.

In my *New Views*, I have pointed out some very striking affinities between the American names for dog, and the names for this animal in the languages of certain tribes and nations of Asia and Europe. If the affinity between the Wunaumech words, *Mo-e-kan-neb*, *Mé-kan-ne*, and the Latin *Canis*, the Italian *Cane*, the Neapolitan *Cane*, be not accidental (and who, attentively considering the very many affinities that subsist between the languages of the old and

new world, will imagine that it is accidental?), we have, probably, arrived at the knowledge of the real meaning of the Latin word *Canis*. *Mékanne*, in the language of the Delawares, signifies “the barking beast.” It appears from Dr. Pallas’s great work (*Vocabularia Comparativa*), that certain tribes of Semoyads call a dog *Kanang*, *Kának*, and *Konak*; and that the Karassini call it *Kannak*.

II. *On a species of North-American Wandering Mouse.*

IN the year 1796, a particular species of Mouse made its appearance at Burlington-Bay, on the west end of Lake-Ontario, and at Long-Point, on the north side of Lake-Erie. They came out of the woods, from the northward, in troops of thousands, and committed great havoc among the Indian-corn.

These animals were so numerous, that, for a good while, they were caught by hundreds, at a time. It is said, that the cats, tired of killing them, came, at length, to play with them, without offering them any injury.

Even in the winter-time, the corn-cribs were extremely offensive, from the great numbers of these mice, that had perished in them.

This mouse is described as a small species, smaller than the common House-Mouse; with a white belly,

and a very long tail. The general colour was that of the House-Mouse.

These animals had never been seen before, nor have they (so far as I can learn) been seen, since the period which I have mentioned. The species is, in all probability, a new one, or unnoticed by the systematic naturalists. It appears to be somewhat similar to the Wandering Rat of Pennant (the *Mus vagus* of Pallas), which “ inhabits the whole *Tartarian* desert (in Asia); and, at certain times, wanders about in great flocks, and migrating from place to place during night. Observed as high as lat. 57° , about the Irtish, and between the Oby and Jenesei, in birch woods.” “ Is called by the Tartars, *Dshickis-sitskan*, or *gregarious mouse**.”

Several other species of Asiatic murine animals are observed to migrate, in great troops. Such are the *Mus agrarius*, *Mus œconomus*, *Mus Lemmus*, *Mus Lagurus*, *Mus socialis*, &c.

A further account of the American animal will be very acceptable to

THE EDITOR.

* *History of Quadrupeds.* Vol. ii. p. 188.

III. On the Use of Indigo, in the Strangles of Horses.

In a letter to the EDITOR, from Mr. THOMAS TURPIN, A. M., Student of Medicine in the University of Pennsylvania.

SIR,

HAVING, in the First Part of your valuable publication, observed a “ Memorandum concerning the use of Indigo in the disease of Cynanche Trachealis*,” I am thereby induced to communicate to you some circumstances relative to the employment of the same article in that disease, to which horses are liable; viz. the “ Strangles,” but more generally called “ the Distemper.”

I have several times, and I think with advantage, administered the Indigo, in the quantity of one ounce at a dose, in the form of one or two boluses. The medicine was given in the evening; the horse was stabled, and not allowed to drink cold water, until twenty-four hours had elapsed.

I am unable to say, in what manner its good effects were produced, or what particular organs were more especially affected, though my ideas were, that it operated as a diaphoretic, and relieved the stertorous breathing with which, in this disease, the animal is commonly affected; which, probably, is caused by a spasmodic contraction of the muscles of the glottis.

* Section First. Article x.

On reflection, after reading your publication, I was forcibly impressed with the analogy between the symptoms of the two diseases, in which the Indigo has been employed, with apparent success. The most remarkable of these are, the age at which the subjects are liable to be affected; cough; discharge of matter from the nostrils*; soreness of the throat; difficulty of breathing and of swallowing; restlessness and fever. I am,

Sir, your's, &c.

T. TURPIN.

Philadelphia, February 4th,

1805.

IV. *Facts and Observations relative to the external employment of the Interior Bark of the Tilia Americana, or American Lime-tree, in cases of Burns and Scalds. In a letter to the EDITOR, from THOMAS WALMSLEY, M. D., Physician at Chambersburg, in Pennsylvania.*

DEAR SIR,

SOME time ago, I mentioned the *Tilia Americana*, as an application to burns, scalds, &c., and supposed it to be entitled to further attention. I have, since that, had considerable experience with

* The velum pendulum palati is much larger in the horse, even in proportion to its bulk, than in man: in its ordinary situation, it completely obstructs the passage of any thing from the larynx or pharynx to the mouth; and compels the animal to breathe through his nose exclusively, unless when it is deranged by coughing.

it, and have no hesitation in recommending it, as superior to any thing I have seen used in these cases: and as my confidence increases with every opportunity I have of using it, I think it right to make you this communication, not doubting but you will give it a trial, as you have already done so much towards ascertaining the properties of our indigenous vegetables.

The part of the tree made use of is the *liber*, or inner bark. I have generally used it fresh taken from the tree; but it answers very well when carefully dried. In either case, it is cut into small pieces, and macerated in cold water, frequently stirring it about. In a short time, the water becomes extremely viscid, and with this the injured part is to be kept constantly wetted.

In what manner this application produces so wonderful an effect, I do not pretend to know. Neither can I say if it would be serviceable in erysipelatous or other inflammations; but as there is some analogy between these and the inflammations from burns and scalds, the experiment would be worth making.

I do not wish you to "acquiesce without good proofs" in the opinion I have formed of this article; and, as I have spoken so highly of it, a few cases of its efficacy may not be amiss. I shall select two cases, which appear to be more pointed than many others, on account of the time at which the application was made.

July 2d, 1804. I was called to see a child of G. H., Esq., a little boy, of about two years old, who, while at play, had upset a tea-kettle of boiling water on his feet, about six hours before I saw him. Immediate application had been made of oil, &c., but the child continued to cry incessantly, and when I visited him, he was, apparently, in great pain. A vesication over almost the whole of both his feet had already broken, and discharged the accumulated serum; but the cuticle was not entirely off. The *Tilia* was applied, as above-mentioned. Half an hour afterwards, the child fell asleep. Next day, the inflammation had pretty much subsided, and, in about four or five days, the recovery was complete.

The other case was that of a child of Mr. M. A., between four and five years old. It had fallen with its hands into the fire, and was severely burnt up to the elbows. The cuticle was, in many places, entirely destroyed, and, consequently, there was but little vesication. This accident happened three days before I had notice of it, during which time the child suffered exceedingly. The same application was made as in the preceding case: relief was almost instantly obtained, and a few days effected a complete restoration.

The preceding cases are sufficient to show, that the *Tilia* merits our attention. Whether my confidence is too sanguine or not, future observation must determine. It has rarely happened, that I have been under the necessity of employing any thing else. I

have no doubt that the cold water has a considerable effect in abating the inflammation; but I am equally certain, that if it were used unimpregnated with the mucilage of the *Tilia*, a very perceptible difference would be found.

Although I cannot say that the *Tilia* grows in great abundance, yet it is by no means rare, in the vicinity of this place. It often reaches the height of forty or fifty feet, and there are several trees two feet in diameter. We generally find it along the water-side, where it makes a beautiful appearance, while in flower; and from its singular mode of inflorescence, the peduncle being a continuation of the middle-rib projected from the centre of the *bractea*, it is calculated to arrest the attention of almost every one*.

Chambersburg, January 12th, 1805.

V. *History of the Epidemic Fever, as it prevailed in Frederick-Town and County (in Maryland), in the summer and autumn of 1804. Communicated to the EDITOR, by Dr. JOHN BALTZELL, of Frederick-Town.*

SIR,

I HAVE drawn up a succinct account of an Epidemic Fever, which raged, last year, in Frederick-

* For some additional information concerning the properties and uses of the *Tilia Americana*, and some other species of the same genus, see the last article in this Section of the Journal.—EDITOR.

Town, and the adjacent country, and now transmit it to you.

This fever commenced about the middle of July, and continued until the beginning of November, when the Bilious Cholic became the prevailing disease. It seldom proved mortal, and readily yielded to proper treatment, though it was very liable to relapse, even when the sensations of the patient had evinced a sure return of health.

Frederick-Town is situated in about $39\frac{1}{2}$ degrees northern latitude, in a valley, through which a small creek makes its way. The water is strongly impregnated with limestone, and the soil is a rich calcareous mould. The district of country, which is called Frederick-County, is washed, on its south-west end, by the Potowmack, and intersected by the river Monocacy, with its numerous tributary streams. The Catoctin-Mountain runs through the western part of it, in a north and south course, and it is diversified by many ridges, in various directions. Its greatest length is about 40 miles, and its breadth from 30 to 35 miles; and, as might be expected in such an extensive tract of country, it contains all the different species of soil. This county has been reputed one of the healthiest, in the state of Maryland.

As there was no meteorological account taken of the weather, during the preceding month, or during the prevalence of the epidemic disease, I can only make a general remark on that subject.

In the month of June, the rains were almost incessant, and the wind blew chiefly from the north-east. The crops of grain were threatened with destruction, from the continual showers to which they were exposed; and great quantities of clover rotted under a luxuriant vegetation; or, being mowed down, putrefied in the meadows. The weather which followed was warm and dry; and it was now that the epidemic fever made its first appearance.

As far as local causes seemed to influence the production of this disease, in its commencement it principally invaded the higher situations, and places usually deemed the most healthy. In its progress, however, it extended its inroads to the bottom-lands, and low grounds, where the inhabitants are visited, annually, with autumnal fevers; and it could not be said, in the latter part of August and during September, that one situation was less afflicted than another, though, here and there, a family would experience it less severely. The town began to experience its indiscriminate fury in those months, a very few cases only having occurred in July.

The prevalence of this epidemic fever will form a memorable era in the recollection of the inhabitants of this place, as well as in the annals of the medical practice here. The prominent characteristic, which distinguished it from the epidemic fevers of the several preceding years, was, that it did not admit of so much depletion with the lancet, and evacuant medi-

cines, but required the free and early use of tonic remedies. It appeared in the following forms :

I. An inflammatory remittent fever, with or without topical affection, and with considerable discharges of green or yellow bile.

II. An intermittent fever, with slight chills, ushering in each paroxysm ; headach, nausea or vomiting of bile, subsiding in a general perspiration.

III. A double tertian, with the alternate paroxysms more violent, attended with the last-mentioned symptoms.

In all these cases, blood-letting was found very useful, and sometimes absolutely necessary.

IV. But the epidemic most frequently made its attack in the shape of a tertian, or quotidian-ague, accompanied with the ordinary symptoms of those diseases, and sometimes with cholera.

V., and lastly. It appeared in the form of a nervous fever, with coma, subsultus tendinum, and typhous pulse, particularly when the symptoms had been reduced by injudicious depletion.

I did not discover, that the epidemic prevailed in one of these forms more in one place than in another.

The following symptoms generally attended this disease. The head was always more or less affected, but the breast very seldom. The stomach suffered much from nausea, cardialgia, and sometimes a vomiting of bile. An acidity was also very troublesome, to which I attributed the dark, viscid state of the bile, which distressed the patient, and sometimes required the repetition of an emetic, to carry it off. A diarrhoea sometimes took place, but more frequently there was a costive state of the bowels. In many cases, there were spasms in the extremities. The urine was always high coloured, and the alvine discharges were bilious, and sometimes green. In female habits, the catamenia were always obstructed. The arterial action varied with the different forms of the disease.

The ordinary febrifuges were employed with good success. Magnesia was found highly useful to correct the predominant acidity in the first passages; and it was not only necessary to alternate or compound it with the neutral and antimonial febrifuge medicines, but to combine it with the Peruvian bark, in the intermission of the fever.

The crisis was not strongly marked in this epidemic. In several cases, I observed an eruption upon the skin, and a peeling off of the cuticle, during the convalescence of the patient.

This disease was by no means formidable on account of the mortality that attended it: for, within

the range of my practice, not more than one patient, in fifty, fell a victim to it. But it was calamitous on other accounts. It would attack all the members of a family, and often *at the same time*; so that many suffered from the want of nurses, and of medical assistance, as five of the six physicians, who practice in this town, were laid up with it. The frequency of relapses kept some in a valetudinary condition, for three or four months. The shops of the druggists were constantly crowded through the day with customers, and the demand for the Peruvian bark far exceeded the supplies which they could procure.

It is with diffidence that I express my opinion as to the cause which produced this epidemic fever. But as it is natural for the human mind to endeavour to trace effects to their causes, I have considered its prevalence as an additional proof of what has been frequently advanced by medical inquirers, that the disease originated from a morbific gas, engendered in the atmosphere, by vegetable putrefaction. The heavy falls of rain, in the month of June, being succeeded by a long drought and hot weather, were calculated to produce such putrefaction; to which, give me leave to add, that I have no doubt, that that part of the continent, over which the rains extended, would define the extent of the prevalence of the epidemic. And I conceive, that the higher situations would feel the effects of such a cause sooner than the lower country, where the excessive degree of mois-

ture would tend to retard the process of putrefaction.
With sentiments of esteem,

Your's, &c.

JOHN BALTZELL.

Frederick-Town (Maryland),

February 4th, 1805.

VI. *On the Poisonous quality of a species of West-Indian Fish. Communicated to the EDITOR, by Dr. FREDERICK DETLEF MEYER.*

THE poisonous property of some species of fish is a circumstance well known in the West-Indies. The following case of this kind is, perhaps, worthy of attention.

I was called in consultation in the case of Mrs. M—k, in the island of St. Thomas. She had been, when I first saw her, an hour in convulsions. Anti-hysterical medicines, of different kinds, had been administered, but the paroxysms had increased in violence.

Upon inquiring more attentively into the case, I was informed of the following particulars. She was forty years of age, had never before had fits, nor any kind of hysterical affection. She had been in perfect good health in the morning, and in her usual good spirits. She had breakfasted on roasted fish*, in

* The author of the paper is incapable of giving me the scientific name of the fish. He describes it as a pretty large species,

company with three other ladies, who had eaten a part of the same food. About half an hour after breakfast, she had fallen upon the ground in convulsions, and speechless.

During the short interval between the paroxysms, she recollectcd her husband, and every body in the room, but when she was asked any question, she was incapable of returning an answer, except by signs.

The three ladies, who had eaten of the same fish, were present, and were not, in the least, indisposed.

An emetic, and various other antispasmodic remedies, were further employed, but the symptoms, instead of decreasing in violence, grew worse, and more alarming. The muscles of the face and the eyes were in dreadful convulsive movements; her mouth was covered with froth; her extremities were cold; the pulsations of the arteries were becoming gradually weaker; and there was no remission in the fits.

I was now persuaded, that our patient had been poisoned, notwithstanding the complete health of the three other ladies. I immediately ordered some olive-oil to be brought, of which we gave her some spoonfuls. Almost immediately after, the convulsions had

sufficient to satisfy the appetites of three or four persons at a meal; and in this respect, at least, very different from the Sprat, which (in the West-Indies) is frequently found to injure those who have eaten of it.—**EDITOR.**

considerably lessened, and, in fifteen minutes, they entirely ceased. She came to the use of her speech, about an hour after.

Her symptoms being thus essentially relieved, I was enabled to make a more particular inquiry into the cause of her illness. We were informed, that Mrs. M——k alone, of all the ladies, had eaten the belly-part of the fish; the others having eaten the other parts of it.

Towards the evening, she complained of a severe pain in her limbs. Four blisters were now applied, and in two or three days, she was able to leave her bed, but she continued, for a long time, to feel very weak, and laboured under depression of spirits.

Philadelphia, February 12th,
1805.



REMARKS.

The preceding relation may be considered as a valuable addition to the stock of our knowledge relative to the poisonous qualities of certain species of fish. In one respect, it is very important. It plainly shows, that while one part of the fish is capable of producing the most alarming symptoms, not less violent than those induced by many of the narcotic vegetables, and even arsenic and some of the preparations

of mercury, other parts of the same fish may be eaten, with entire impunity. And from this fact, if I do not mistake, we deduce an inference of considerable importance, both in a physiological and in a practical point of view.

I. The *physiological* inference would seem to be, that the poisonous quality (whatever may have been its nature) of the fish had not been communicated to the animal *through the medium of the circulating mass of fluids*. If this had been the case, the deleterious property would not have been confined entirely to one particular part (the belly) of the animal, but would have been nearly equally diffused through all the soft parts. We thus seem to have an additional fact in support of the ingenious experiments of Mr. Dupuytren, and other physicians, who have, in vain, endeavoured to impregnate the chyle of dogs, and other animals, with certain foreign animal, vegetable, and mineral substances. It seems much more probable, from the above statement, that the noxious property which produced the alarming symptoms in the case of Mrs. M——k, was communicated from the stomach, or intestines, or both, to the subjacent parts of the animal, after its death.

II. In a *practical* point of view, the relation is important. It seems to show the necessity of removing from all such suspicious species of fish, their stomach and intestines, as soon as possible after they have been caught; before the noxious matter which these organs contain, can have passed, by transudation,

and thereby communicated to the neighbouring fleshy parts, the power of producing such alarming effects as occurred in the case of Mrs. M——k. It is more than probable, that had inquiry been made, it would have been found, that the fish of which she ate, had not been cleansed for some time after it was caught.

From the foregoing relation, it may seem adviseable also, to avoid eating the belly-part of suspicious fishes, even when they have been cleansed very soon after they have been taken.

The facts related by Kæmpfer, Dr. Forster, and other respectable writers, who have given us accounts of the deleterious properties of different species of fish (particularly of *Tetrodon* and *Sparus*) are well known: but these facts lose a portion of their value, in consequence of the silence of the relators relative to the state of the fish for some hours before they were dressed and eaten. Perhaps, navigators, in distant seas, where fresh provisions are so grateful to them, and even so necessary to their health, by attending to the precaution which I have pointed out, may eat, with entire impunity, those very species of fish, which, without such precaution, would produce all those distressing, and sometimes mortal, effects, which were experienced by the crew of one of Captain Cook's ships, during his second voyage round the world; and which are often experienced in the West-Indies.

The well-ascertained facts relative to the poisonous quality of certain species of fish, may serve to re-

move the doubts of many Americans, concerning the injurious effects which, it is believed, have followed the eating of the flesh of the American Pheasant (*Tetrao umbellus*), in Philadelphia, &c. That these birds, in consequence of their having fed upon the leaves, &c. of the Laurel (*Kalmia latifolia*) and other poisonous vegetables, have sometimes produced very alarming effects, and even death itself, in persons who have eaten of their flesh, cannot, I think, admit of a doubt. If the principles which I have laid down be correct, there will be little danger in eating the Pheasant (even when it may have subsisted, for some time, upon the Laurel, &c.), provided the bird's stomach and intestines be carefully removed, immediately after the death of the animal. Without this treatment, accidents will occasionally occur, especially in severe winters, during which the ground has been, for a long time, covered with snows.

THE EDITOR.

VII. *On the Salivating and other effects of the Digitalis Purpurea, in a case of Dropsy. Communicated in a letter to the EDITOR, from Dr. ENOCH WILSON, of Hights-Town, in New-Jersey.*

DEAR SIR,

AT our late interview, at the Alms-House, in the city of Philadelphia, you called my attention to a patient, in the medical department, who had been completely salivated by the Gum Guaiac.; adding, that it was not the only case you had met with (al-

though the most decided and unequivocal), where you had observed this effect to follow the use of this medicine.

This conversation introduced the subject of the salivating property of certain vegetables, amongst which you mentioned the *Digitalis Purpurea*, or common Fox-glove, as having produced the same effect; and referred me to the publication of an instance or two, in your *Medical and Physical Journal*, in support of this opinion. These I have since examined, and find they (especially one of the cases) tend to confirm the idea of its salivating powers.

You, doubtless, recollect my mentioning, that I had (as I believed) seen this medicine exert its power in this way on a patient, who was under my more immediate care, who laboured under ascites and anasarca. In compliance with the request made, I will give you the history of this case, nearly as noted down in my common-place book, at the time it occurred, with the liberty of making that part public, which you deem important, if there be such a part contained in it.

In the month of March, 1801, I was called upon to visit a lady, about fifty-seven years of age. On my arrival, I found her greatly distended with water, insomuch that she was the greatest monster in human shape I had ever observed.

The account which she gave me of her case was as follows. That, two years and a half ago, she was seized with the most violent pain of the breast or stomach, which induced her to apply for aid to a neighbouring physician, who gave her several small pills (which she supposed chiefly consisted of opium), with suitable directions. These soon relieved her of the pain of that part; but she was, shortly afterwards, distressed with a very troublesome pain of the ankles and feet, for which she refused, at this time, taking any thing, fearing the medicine might translate the disease to a part more dangerous, and less sufferable. The pain, however, continued so violent, that she was again necessitated to call for assistance, when she had used a great variety of local applications, such as liniments, fomentations, cataplasms, caustics, blisters, &c., by different physicians, and the common people; but all to very little purpose. The blisters, she thinks, injured her, as she has used her feet very little since their application. She was finally advised to have recourse to laudanum to mitigate her sufferings, which she took in doses proportioned to the degree of pain. Some time after the use of this medicine, her feet began to swell, then her ankles, legs, and thighs, and lastly her abdomen. It had now been nine months since she began to swell. So much for her own history.

As before observed, I found her greatly enlarged, in consequence of the effusion of water in her lower extremities and abdomen, and sitting in one of those old-fashioned armed-chairs, which was not large

enough to contain her, without making considerable indentations on her thighs by the posts of it. She had not been able to lie down on the bed, for three weeks; her breathing was difficult; she was almost a stranger to sleep; her appetite was excessive, craving the strongest and most heating food; her thirst not more than when in ordinary health; her pulse nearly natural; the quantity of urine she made was very sparing, not more than from half a gill to a gill in twenty-four hours. She had none of the common symptoms of fever, save a white tongue; and she complained heavily of the pain of her ankles and feet, notwithstanding the liberal use of opium. This being her situation, it is not surprising that she should anxiously wish for that period which would put an end to her sufferings.

In this state, I directed her to take half a grain of digitalis, made up into pills with the mucilage of Gum Arab., three times a day; a grain of opium at bed-time; Jallap and Crem. Tart. to obviate costiveness, and Cream of Tartar dissolved in water as a drink, which she was desired to take freely. Three days after the use of these medicines, she made near a pint of water in the twenty-four hours; was able to lie on the bed for several hours; got some sleep, and appeared to be better in every respect, except of the pain of her feet and ankles.

The dose of the digitalis was gradually augmented to eight grains in the night and day; the opium was diminished. The quantity of the urine was increased

in proportion as the medicine was more freely administered. I never ventured on a larger dose than eight grains in the twenty-four hours, for the sickness of stomach which this induced was truly distressing. As soon as the medicine sensibly produced distress of the stomach, the discharge of urine amounted to half a gallon in the day and night. This quantity she continued to evacuate, and has done it for three weeks past. Most of the water is carried off; but she still complains grievously of her feet and ankles; for which I intend salivating her with mercury.

Another effect of the Digitalis, besides that which I have already taken notice of, remains yet to be mentioned: viz. its salivating property, as having taken place in this patient. Authors speak of its tendency to produce salivation, particularly Dr. Barton; but no writer, so far as known to me, has published any cases in particular, where this effect has followed, in consequence of the use of this medicine. I am, however, decidedly of opinion, that it acted as a salivant, as well as diuretic, in this case; for the quantity of saliva, or water, which was discharged from the mouth, amounted from a pint to a quart in the day and night.

Perhaps, this ptyalism may by some persons be ascribed to its nauseating the stomach. I am, however, bold to say, this was not the cause, for the medicine was more than once intermitted, in order to ascertain this matter. It is true, the salivation was somewhat greater, when the stomach was distressed

by sickness ; but it is equally true, that this effect took place long before the medicine affected the stomach ; and then the sickness and salivation bore no kind of proportion to each other, which would have been the case, had it been owing exclusively to that cause.

I forbear saying any thing at present, on the additional advantage derived from the Digitalis acting as a salivant, on this patient, in removing the dropsical complaint.

This woman did not, to my knowledge, take a single grain of mercury, in any form ; neither did she make use of any external application, which could have induced the salivation. I do not recollect particularly what appearance the gums put on, nor whether there was any fœtor of the breath followed the use of our medicine, for I have not noted any thing in these respects.

I should have mentioned, that this patient complained much of a prickling and itching sensation of the skin, at the time when her size was greatly lessened ; but this was probably owing partly to the returning sensibility of the skin, and partly to the intemperate use of opium.

P. S. It is to be regretted, that the subject of the foregoing case, after showing such favourable symptoms of recovery, fell a victim, most probably, to her using opium in so great profusion, notwithstanding

my remonstrances to the contrary, and her entire conviction of its baneful effects on her system. Her attachment to it she could not forego; and it seemed to occasion death, by destroying the tone of her stomach, rather than by re-producing the dropsical complaint; or, perhaps, I should express myself more properly by saying, that the alternate use of Ol. Ricini, to obviate the costiveness induced by the opium, and the opium, so impaired her digestive organs, as to occasion her death.

*Hights-Town, February 7th,
1805.*

VIII. *Hints relative to the Medical Properties of the Hypericum Perforatum, or Common St. John's-Wort. Communicated in a letter to the EDITOR, from his Brother, WILLIAM BARTON, Esq., of Lancaster, in Pennsylvania.*

WHEN I take up my pen to write to you on a subject with which I am, professionally, altogether unacquainted, and you * * * * *, my mind suggests to me the recollection of two well-known maxims; *cuilibet, in sua arte, credendum est*,—and *Ne Sutor ultra Crepidam*. Yet, recollecting, also, that many useful facts and truths have obtained general notoriety, by means apparently ill-suited to the end, I will venture to state what I conceive to be a matter of considerable utility, in your own profession. In short, I mean to give you a plain statement of the ef-

fects of a common medicinal plant, in a very troublesome disease. I will not pretend to assign the rationale of the effects produced by this plant, * * * * * *.

Between two and three weeks since, I took cold, by being exposed to the night-air, for a considerable time, after an excessively warm day ; and I was affected, for several days, with the usual symptoms of a recently-obstructed perspiration. This cold did not go off in the manner that similar complaints generally do, in my constitution ; that is, by a diarrhoea, of short continuance. It had rather the opposite effect, during, perhaps, four or five days ; and this latter habit of body was soon succeeded by a cholicky affection, attended with considerable pain and flatulency. These were quickly followed by frequent and copious discharges of thin (sometimes, almost watery), fetid, and (at times, frothy) pale yellow feces, accompanied by the painful sensation before-mentioned.

When I had been some days in this condition, I took 35 grains of Rhubarb, which operated pretty severely. I experienced, however, no mitigation of my complaints, from the use of this medicine : on the contrary, they increased, together with the weakness, langour, and dejection of spirits, which progressed with the disease. I continued, notwithstanding, to walk about, as usual. My appetite was weak, and my stomach seemed disordered. A sensation of nausea was several times excited, in the course of

the disease, and twice or thrice that sensation produced a discharge from the stomach. The last time but one, that this occurred (which was about twenty-four hours after I had taken the rhubarb), I broke out into a cold sweat, and had nearly fainted. The abdominal complaint was operating at the same time. These effects of this disease (I know not what to term it), and the continuance of the diarrhoea, during the night, left me very languid. I think, however, that none of the symptoms were attended with any fever, from the beginning. I felt my disposition to sleep nearly the same as usual; and two nights, if my recollection serves me, I perspired pretty freely. From the commencement of my complaint, I ate very little animal food, except once, when a sickness at stomach, and vomiting, were the consequences.

In this state of my indisposition, I met with a neighbouring gentleman, who recommended to me the use of Bitters, made by infusing the dried flowers and the top-leaves of the plant called St. John's-Wort, in brandy, and exposing it to the sun five or six days, to digest. I immediately procured some of these bitters, from another friend, and took a small wine-glass full. This very soon produced a very grateful warmth in the stomach and bowels. Towards the close of the day, I repeated the dose, but in somewhat smaller quantity, and on three succeeding mornings, I continued it.

The gentleman who favoured me with the medicine, and another with whom I also conversed concerning it, had, I found, invariably used it with success, in their own cases, of the like nature. The former told me, he had recently taken three glasses, in the course of a night, when afflicted with a violent diarrhoea ; and that he was cured by that quantity. In my own case, the fact is, that I have had but one slight attack of the diarrhoeal symptom, since I took the medicine ; and that was in the evening of the first day on which I used it. Since that time, I have been recovering my appetite, strength, and spirits, and my natural state of body seems now restored. I firmly believe this medicine has produced these effects.

The St. John's-Wort grows abundantly in our neighbourhood, and, probably, in most parts of this country. It seems to be pretty generally known to the people here, of German extraction, by whom it is considered as a *specific*, in cases of diarrhoea, both for adults and children. The season in which it is gathered and dried, is from the end of June to the end of August, when the flowers disappear. It is in bloom on *St. John's* (Baptist's) *day*; when, our people say, it ought to be taken in.

I am informed, that your correspondent, the learned Dr. Muhlenberg (of this borough), with whom I have not yet had an opportunity of conversing on the subject, was the person who first brought this plant into

general use, as a remedy for diarrhoea, in this part of the country.

Lancaster, September 2d,
1800.

P. S. Since I wrote the foregoing, I have had an opportunity of conversing with Dr. Muhlenberg, on the subject of the plant. He informs me, that, more than twenty years ago, he recommended, in this neighbourhood, the use of the St. John's-Wort, as a specific in diarrhoeas, dysenteries, and those complaints of a similar nature, to which young children are so liable, in our summers. About the same time, he mentioned it, as an excellent remedy, in such cases (as well as in some others), to Dr. Schoepf, who notices it, in his *Materia Medica Americana*, under the name of *Hypericum Virginicum*. But Dr. Muhlenberg terms the species we have so common here, *Hypericum perforatum*, the leaves, or petals of the flower having a number of apparent perforations, which contain a reddish-coloured balsam. It is, I suppose, this balsam, or essential oil, which imparts a fine claret-colour to the spirit, in which the flowers are infused.

When it is given to children, for what is commonly called "the summer-disorder," or "vomiting and purging," Dr. Muhlenberg recommends this tincture prepared with brandy, with the addition of a small quantity of cinnamon. This may be mixed with a little sugar and water, when the medicine is admi-

nistered. He says, also, that it ought not to be given in the dysentery, until some evacuating medicine has been previously used; but that this precaution is not necessary, in cases of mere diarrhoea.

W. B.

REMARKS.

The *Hypericum perforatum*, or Common St. John's-Wort, is abundantly distributed through the United-States: but it is well ascertained, that it is not a native of the country. The precise period of its introduction from Europe is not known.

The properties of this plant have been noticed by many writers. Linnæus, in his *Materia Medica*, speaks of it, in terms of extravagant praise. He says, it is a vulnerary, resolvent, and anthelmintic vegetable, and that it is useful in hæmoptysis, hæmaturia, and hypochondriasis*. Long before the time of the Swedish naturalist, it was highly commended, in melancholy and in madness, by Angelus Sala. Of its use in diarrhoea, and in similar affections, I have not been able to find any traces, in the writings of physicians.

The reader who is desirous of obtaining more ample information concerning the real or supposed

* *Materia Medica, &c.* p. 128.

powers of this vegetable, may consult the *Botanologia Medica* of Zorn; a dissertation, by Houckius, *de Hyperico, aliis fuga daemonum, &c.*; and the *Apparatus Medicaminum* of Murray*. It is, unquestionably, a plant of no mean powers, though its use may (as Dr. Withering says) be “ very much undetermined.”

Mr. Bingley informs us, in his *Tour*, that on the Eve of St. John the Baptist, the inhabitants of North-Wales fix sprigs of this plant over their doors, and sometimes over their windows, in order to purify their houses, and by that means drive away all fiends, and evil spirits, in the same manner as the Druids were accustomed to do with the Verbena, or Ver-vain. Similar notions concerning the anti-dæmonic virtue of the St. John’s-Wort have prevailed in Germany, and other countries of Europe. *A history of the superstitious opinions and practices of mankind, concerning different species of plants,* is a desideratum in science and literature. Such a work, if well executed, might serve to throw considerable light upon the original and migrations of nations, and would even enlarge the stock of our knowledge concerning the operations of the human mind,

EDITOR.

* Vol. iii. p. 518—525.

IX. *Additional Observations on the Falls of Niagara, and particularly on their (supposed) original position. In a letter to the EDITOR, from Mr. FELIX ROBERTSON (of the State of Tennessee), Student of Medicine in the University of Pennsylvania.*

SIR,

AGREEABLY to my promise, I here subject to your inspection, some of my reasons for dissenting from the gentleman (respecting the original seat of the Falls of Niagara), from whose Journal you extracted the very striking and animated description of those Falls, published in the First Part of your *Medical and Physical Journal**.

Were it immediately connected with my present purpose, I might also observe, that I think the gentleman, in his ideas of the current of the river, above the falls, has been somewhat mistaken. This current, I should have said, gradually decreased as the river leaves Lake-Erie, for several miles, at the same time that it gradually increases in breadth, becoming from three-fourths of a mile to two miles in breadth. His authority, however, is no doubt as good as mine; and, at any rate, it is a circumstance of very little consequence.

The author of the paper, in your Journal, enters upon the question in view, by observing, that he

* Section First. Article xiii.

thinks the notion that the Falls were once at the slope “ seems extravagant” ; and, therefore, he concludes, that they “ received their present singular position at * * * * * * *.”

Let us take a momentary view of the opinion which the author has adopted, and see whether *it* be entirely void of extravagance.

According to his belief, one of two things must have produced the Falls; either the laws of matter at * * * * * * * *, or the miraculous interference of the Deity with those laws at * * * * * * *. In the first of these cases, what a vast number of concurrent circumstances must be admitted, the absence of any one of which would have effectually destroyed the phenomenon; and these circumstances entirely accidental, and unconnected with the necessary operation of the laws of matter.

That a vast channel should be left in a bed of rock, which is precisely of the same kind, on each side, and corresponding, in most of their eminences and depressions, in the only spot of all the surface of this globe which could have produced the effect, previous and closed at its proper ends, running precisely in the proper direction; of the necessary degree of inclination, &c.; I say, that all these should have been produced at * * * * * * *, by the laws of matter, would appear to me no less strange, than that those same laws should, at * * * * * * *, have produced a clock, or a piano-forte.

We cannot suppose that it was thus formed by the interference of the Deity with his established laws, unless to accomplish some great design ; and if this design is not made manifest, the opinion is without the least degree of probability. What, then, I would ask, is the end obtained by it ? If the answer could be, that it is the draining of the extensive country covered by Lake-Erie, I would stop short, and desire no better. But this it cannot be, for Lake-Erie still exists, and ever will, until the rock between it and the Falls has shared the fate of that below the Falls. In short, it appears, that if your author has rejected one opinion, on account of its extravagance, the one he has embraced is by no means unexceptionable.

I shall now endeavour to show, that the Falls were originally at the slope, nine miles from their present situation ; and that, by the operation of the laws of matter, they have acquired their present appearance. Perhaps, the nature of this slope will be better understood, by comparing the country to a cube, cut perpendicularly through its middle, and one half slipped over the other, answering to three hundred feet. The lower half will then represent the country below the slope, on which Lake-Ontario is spread ; and the upper half the country above the slope, on which Lake-Erie is situated. This slope extends as described in the paper to which I refer (in your *Journal*) ; and although it cannot be called a mountain, it is somewhat more elevated than the country back of it, thereby forming Lake-Erie.

Now it is evident, that the water would be confined behind this slope, until it arose high enough to pass over its most depressed part, and then escape by pouring over the precipice. This depression was at the present Landing, or Queenstown, *and there first commenced* the Falls of Niagara. At that period, it is clear, both from reasoning, and from the face of the country, that Lake-Erie was far more extensive than at present, and that it has, ever since, been gradually diminishing in size, by the washing away of the soil and stone, over which the river passes.

In the first place, I will mention a fact which is absolutely necessary to be known, in order to fully understand the history of those falls; a fact which seems to have entirely escaped your author's observation, and thus proved the source of all his errors on the subject.

The strata of rock, which compose the elevated part of the superior country, is remarkably hard from the surface to a considerable depth, after which it is as remarkably soft and yielding, losing, by long immersion in water, almost all power of cohesion. A knowledge of this fact (and I see not how he came to avoid noticing it) would, I am persuaded, have convinced the author of the Description, that, in a given length of time, it might be worn away, not merely nine miles, but even ninety times nine, provided the given period was sufficiently extensive. I am also surprised, that he should say, that there is no vestige of this rock remaining.

After what I have said, respecting the nature of this bed of stone, it will not be expected, that the whole bulk, answering to the channel, should be found in broken masses, but only that portion which is hard, and more durable. This we should expect to find in the cavity below, formed by the washing out of the soft and yielding rock, by the fall and agitation of the water. Accordingly, we do find this portion, and in this very situation.

The extreme agitation of the water, through the whole length of this unparallelled channel, discovered by its alternate bounding and plunging (which, in some places, I am confident, I have observed to bound to the height of at least twenty feet), most forcibly points out the huge masses of rock, which, in vain, oppose its course.

Just within the entrance of Lake-Ontario, there also lies a vast bed of stone, which can have no other source for its origin, because the banks of the lake are entirely destitute of rock; and I have no doubt, that there are vast bodies of rock buried beneath the bed of the river, for some distance below the Landing, perhaps, through its whole course, until it reaches Lake-Ontario: for we actually find, as I have already observed, a large quantity of rocks immediately within that lake.

I flatter myself, that it is already sufficiently evident to you, that the rock has actually been worn away, and that very decided vestiges of that rock are yet to

be seen. However, I will still trespass further upon your patience, in order to obviate every difficulty which the author of the *Description* has started.

He observes, in the next place, that if it were possible that the rock could be worn away so rapidly, it would, then, necessarily have worn only at its surface of contact with the water, and would thus have effectually destroyed the Falls, by rendering the bottom smooth, or would, at least, have reduced them to the state of Rapids. But, since neither of these circumstances have taken place, he thinks it demonstrated, that the Falls were always where we now see them.

This, I will allow, was very accurate reasoning, according to his ideas of their formation, and had not these ideas been erroneous, his argument would, unquestionably, have been insurmountable. But I need hardly observe, that, from the explanation which I have given of the nature of the strata of rocks, over which the water falls, it will appear evident, that they must retain their perpendicularity, for the upper portion of stone is always projecting far beyond the under portion. From this explanation, it will likewise be evident, that but very little of the ledge of rock is actually worn away, but, that in consequence of its base being washed out, it falls, in huge masses, into the chasm below.

This disposition of the strata, in my opinion, very readily accounts for the moving of the Falls, and also

for their retaining their perpendicularity; and, surely, an explanation of phenomena, on the principles of the well-known laws of matter, should be deemed preferable to the language of your author, on the same subject.

The position of the Island, which divides the Falls, is the next argument which he advances to refute the opinion which I am advocating. The base of this island should, he thinks, project beyond the sheet of water, provided the ledge of rock were fast wearing away. This, certainly, would have been the case, provided both sheets had moved considerably since their separation: but this they have not done, for while the large sheet has moved, perhaps three hundred yards, the small one has been almost stationary. The cause of this difference is so obvious, as to need no explanation. Now, it is evident, that if the two sheets were in contact at their inner ends, and the larger one then moved up the river to the place it, at present, occupies, it would necessarily cut the base of the island, in the manner we find it. This explanation may, perhaps, seem difficult to be understood by those who have not seen the Falls; but must be obvious to those who have examined them.

The remainder of the arguments which the gentleman employs, are, I think, still more feeble than those which I have considered.

Are not the Falls of Niagara likely to prove the best test (although by no means accurate), of the age

of America? And is it not probable, that many of the supposed earthquakes of that country (Canada) are nothing more than huge masses of stone tumbling into the chasm at the Falls?

I remain, Sir, &c.,

Your friend and pupil,

FELIX ROBERTSON.

*Philadelphia, February 9th,
1805.*

P. S. On an elevated piece of ground, ten or twelve miles west of the Falls, I had, at the same time, a distinct view of the two Lakes, Erie and Ontario, and the column of cloud, or vapour, arising from the Falls. I have specimens of the stone from the top of the Table-Rock, and from the bottom, immediately under it. I have not yet examined them, with sufficient care; but I find, that neither of them effervesce with the sulphuric, nitric, or muriatic acids, which shows that they are not carbonates of lime. The whirlpool, three miles below the Falls, exhibits nearly as curious and magnificent an appearance as the Falls themselves.

X. *Medical Facts and Observations, on several subjects. Extracted from a letter from Dr. LEMUEL KOLLOCK, of Georgia, to Dr. WILLIAM CURRIE, of Philadelphia. Communicated to the EDITOR, by Dr. CURRIE.*

OUR inflammatory fevers and pneumonic affections, in the early part of winter, are frequently accompanied with bilious symptoms, partaking of the constitution of the preceding autumnal fevers ; i. e. sickness of stomach, vomiting of bilious matter, headache, prostration of strength, &c. And although such copious and repeated bleeding is not necessary, at this season, as in pneumonia of spring, yet the lancet is advantageously employed, as one of the best curative means.

Blisters are very generally applied, and are found highly efficacious (when applied to the region of the stomach) in controuling the vomiting, which is sometimes so difficult to manage. Much confidence is placed in bleeding and blistering, in such cases.

By the physicians, emetics are seldom employed, cathartics answering the intention better, without hazarding the increase of inflammation, or the rupture of blood-vessels.

Many planters (who, from necessity, practice much among their Negroes) have long been in the habit of giving emetics, as well in this form of disease, and

pleurisies, as in very many others that occur upon their plantations ; and they are very often successful (judging from their reports) in pleurisies. And such is their confidence in Antimon. Tart., Serp. Virgin., blisters, and the lancet, that they look for no other remedies in pneumonic inflammation, and often employ but the two first.

Pneumonia notha is a disease of such rare occurrence, that I can hardly judge of the general practice here : I should believe it conformable to that which generally obtains.

In our fevers of summer and autumn, applications of cold water and partial immersion are common and efficacious prescriptions, and are daily gaining credit. In our worst cases, the lancet, cold water, and mercury, urged to the affection of the salivary glands, are found the most powerful means of overcoming the disease ; and we have witnessed few unsuccessful cases, where these remedies have been timely employed, and duly urged. The rapid progress of many cases of fever, last fall, did not admit of charging the system with mercury, before delirium, with death at its heels, snatched the patient from our hands. But, in these formidable cases of fever, we have rarely trusted to one or two remedies, while we had a choice of more. Bleeding, purging, blistering, cold water, and mercury have, however, composed the catalogue of remedies, in which we have reposed the greatest confidence.

In our dysenteries, bleeding, in the early stage, is found useful, and, in bad cases, almost necessary, to the successful management of them. Our practice, in short, varies little from what you have stated as your most successful mode of treatment. The liberal use of the tepid bath, during the most painful period of the disease, I have found a useful auxiliary. The effects of salivation, in dysentery, I have never witnessed ; though I have been told, by one of our medical gentlemen, that he has seen it successful.

In the treatment of *Cynanche trachealis*, though bleeding be not held absolutely necessary to the cure, it is, however, believed to be beneficial, and is sometimes practised, previous to the exhibition of an emetic. Blisters are also commonly applied ; and calomel is also one of the common remedies, although I have never known a case altogether entrusted to this remedy. In some parts of Europe and America, I observe, this has acquired a confidence superior to any of the known remedies. The *Polygala Senega*, as recommended by Dr. Archer, is now added to our catalogue, and is exhibited, it is said, successfully. I have myself had no opportunity of trying it, since its recommendation.

Scarlatina anginosa is also a disease we rarely meet with in this country ; but, I believe, is seldom accompanied by putrid or malignant symptoms. No case has come within my knowledge or observation, since my residence in this country. In New-

England, where it is more frequently seen, mercury was one of the principal medicines employed.

From my own experience, I am unable to determine, whether any material benefit is derived from the use of either cold or warm bathing, in Tetanus. One, or both, are usually employed, in conjunction with other remedies; and from what we know of the disease, I should have no hesitancy in giving a preference to the cold-bath. Opium, Calomel, Bark and Wine, all have their advocates among us.

In several cases that have fallen under my notice, arising from wounds, I have attributed the cure to the external application, and internal use, of the Balsam. Peruvian., whose influence has, in several instances, almost immediately controuled the spasm, and, of itself, restored the patient, when rapidly sinking under the very liberal use of opium, bark, and wine. I have never witnessed its influence in tetanus, resulting from other causes, but should certainly avail myself of an opportunity for trial of it. Two drams, in twelve or fourteen hours, is the largest quantity I have found it necessary to give.

You have, undoubtedly, become acquainted with the character of the Melia Azedarach, vulgo, Pride of India, or China (which abounds in the southern states,, as a vermisuge of efficacy. Its use is, in some measure, general among the planters; and, with many, supersedes the use of all others. I have given it with success, where all others, in common

use have failed of relieving. An intelligent friend, who is a planter, informs me, that it is a general and successful remedy, upon his plantation, in all verminous affections of the alimentary canal ; and that, excepting when given in the months of March and April, while the sap is mounting into the tree, he has never, in any one instance, witnessed any of its narcotic effects ; but, when given at the above periods, it was sometimes followed by stupor, dilatation of pupil, stertorous breathing, subsultus, &c. I have, in one instance, seen some of the above effects produced by it, and it occurs to my recollection, that it was in the month of March or April. But these symptoms, like those sometimes produced by the *Spigelia Marilandica*, pass off without any perceptible injury to the system.

A knowledge of these facts may prove of importance in obviating the objections that have been made to the use of this powerful vermifuge, which, also, like the *Spigelia*, is a useful febrifuge medicine, in those affections usually denominated verminous fever, but where no worms are voided.

The common form in which the *Melia* is given, is that of decoction. A large handful, say about four ounces, of the bark of the root, fresh, is boiled in a quart of water, till it acquires the colour of strong coffee ; i. e., to about a pint of which from half an ounce to an ounce may be given, every two or three hours, till it operates. Given in this manner, its operation is powerful, sometimes both vomiting and

purging. The strength of the decoction is, however, varied, according to the intention.

Cumberland-Island (Georgia),

September 4th, 1803.

XI. Extract of a letter from Dr. CURRIE to the EDITOR, giving some account of the deleterious effects of the *Spigelia Marilandica*, or *Carolina Pink-Root*, in two cases.

SPEAKING of the Melia, mentioned in the last article, Dr. Currie says,

" From the established efficacy of the Spigelia, however, I am inclined to give it the preference, when exhibited in moderate doses, and with proper precautions. Without these, it sometimes produces very singular and distressing effects upon the nervous system, as has been remarked by the late Dr. Lining, of Charleston : the truth of which I had lately an opportunity of seeing confirmed, in two girls, of delicate constitutions, between five and seven years of age.

" Two ounces of the root of the Spigelia, fresh bruised, were boiled in a quart of water, over a slow fire, till reduced to something less than a pint, when strained. About four ounces of this decoction were given to each of the girls before breakfast. In less than an hour, they both began to complain of vertigo, and pain over their eyes, though the oldest one had

thrown up part of her dose, soon after she had taken it. They gradually became like persons intoxicated with spirituous liquor, staggering about, talking incoherently and deliriously. After continuing in this way for near four hours, they both went to sleep, and when they awoke, they were free from every perceptible complaint, excepting slight sickness at stomach, which soon went off, and, next day, they were perfectly well.

“ While they were under the inebriating effects of the medicine, the pupils of their eyes appeared very much enlarged; but I did not observe the convulsive motion of the muscles of the eyes, mentioned, by Dr. Lining, as a common occurrence of an over-dose of Spigelia.”

Philadelphia, February 15th,
1805.

XII. *Notice of the Epidemic Fever, which prevailed in York-Town, and the adjacent country, in the autumn of 1804. In a letter from Dr. JOHN SPANGLER, to Dr. CURRIE. Communicated to the EDITOR, by Dr. CURRIE.*

SIR,

DURING the autumnal months, there prevailed, in this town and its vicinity, a bilious remitting fever, assuming, in some instances, a typhous, and, in many instances, towards the close of the sea-

son, an intermittent form. It was attended with considerable mortality, among the poorer class of people, owing to the want of proper attention and medical aid.

There was nothing uncommon in the symptoms of the disease. Relapses, however, were frequent, and indeed very general, rendering the disease exceedingly obstinate. In one or two cases, which came under my own observation, a dark-coloured fluid was spontaneously discharged from the stomach, and this was succeeded by a deep-orange tinge, discolouring the whole of the body.

Evacuant medicines, occasional depletion with the lancet, and the timely use of tonics, proved, even in these cases, successful.

Few, if any, cases of the epidemic approached to that high grade, or inflammatory diathesis, which prevails in Yellow-Fever: neither can we suppose the disease to have been contagious, except in the last-mentioned case*, where several of the attendants ascribed their illness to this source.

I would here mention a circumstance that is singular, and perhaps worthy of attention. In York-county, and most of the adjacent counties, the disease seems to have been confined to limestone vallies, and

* That in which a peculiarly dark-coloured fluid was thrown up from the stomach.

places hitherto remarkable for their pure atmosphere, and for their healthiness.

Our seasons have been wet, and the vegetation exceedingly luxuriant, especially the clover. A neighbouring farmer, on the highest ground, and in the open country, where intermittents were, in former years, scarcely known, was, together with his family, among the first sufferers. In endeavouring to account for this circumstance, he observed to me, that his cattle turned from his clover-fields, and grew lank and poor, which induced him to make a more minute examination. He found the clover in a highly putrefactive state, and emitting a very offensive smell. This man's whole family, consisting of eight or ten persons, were seized with the disease. Two of the number, those first taken ill, died about the latter end of July, or the beginning of August.

York-Town (Pennsylvania), December 26th, 1804.

XIII. *On the Use of Issues, in the Cure and Prevention of Diseases. In a letter to the EDITOR, from Mr. JAMES W. STEVENS.*

THERE is one thing I think it my duty to communicate to you, which is the principal intention of this letter. I breakfasted, one morning, at Dr. Beech's, near the Onondaga-Hollow*. Labouring

* In the State of New-York.

under an indisposition of the lungs, which was occasioned by the hardships of his profession, he, in consequence, relinquished the practice of it, and at present keeps a public house. He informed me, that he had removed the indisposition of his lungs, by the use of a seton, in his side.

While he laboured under this infirmity, he frequently visited upwards of one hundred patients, labourers at the Onondaga-Salt-Spring, who were all ill with bilious fevers. Among this number, he found only two and himself, who were exempted from the disorder. The cause of this exemption he imputes to the circumstance of issues, or running sores, in the two labourers; and the discharge from the seton, in himself. One of the men had a running sore on his leg, and the other a scald head.

Dr. Beech concludes, that the disorder was prevented by these evacuations, which he found were much more copious, while the fever raged, than at other times. The discharge from his side was also more copious while he remained at the Spring, than when he was absent.

It is remarkable, that out of more than one hundred, only these three persons, thus circumstanced, should be exempted from the fever. From hence, I have been induced to believe, that issues might prove an excellent preventative of the Yellow-Fever, &c.

Cannandaigua (State of New-York),

January 12th, 1801.

XIV. *Observations and Conjectures relative to the supposed Welch-Indians, in the western parts of North-America. Republished from the "Kentucky Palladium." With additional Remarks and Conjectures, by the EDITOR.*

SIR,

NO circumstance relating to the history of the Western-country, probably, has excited, at different times, more general attention and anxious curiosity, than the opinion, that a nation of white men, speaking the Welch language, reside high up on the Missouri. By some, the idea is treated as nothing but the suggestion of bold imposture, and easy credulity ; whilst others regard it as a fact, fully authenticated by Indian testimony, and the report of various travellers, worthy of credit.

The fact is accounted for, they say, by recurring to a passage in the history of Great-Britain, which relates, that several years before the discovery of America, by Christopher Columbus, a certain Welch prince embarked from his native country, with a large party of emigrants ; that, after some time, a vessel or two came back with the account, that they had discovered a country far to the westward, and that they set sail again with a fresh reinforcement, and never returned any more.

The country which these adventurers discovered, it has been supposed, was the continent of North-

America, and, it has been conjectured, that they landed on the continent, somewhere in the Gulph of Mexico, and from thence proceeded northward, till they got out of the reach of the hostile natives, and seated themselves in the upper country of Missouri.

Many accounts, accordingly, have been published, within the last thirty years, of persons who, in consequence, either by accident, or the ardour of curiosity, have made themselves acquainted with a nation of men on the Missouri, possessing the complexion of Europeans, and the language of Welchmen.

Could the fact be well established, it would afford, perhaps, the most satisfactory solution of the difficulty occasioned by a view of the various ancient fortifications, with which the Ohio country abounds, of any that has ever been offered. Those fortifications were evidently never made by the Indians. The Indian art of war presents nothing of the kind. The probability, too, is, that the persons who constructed them were, *at that time*, acquainted with the use of iron : the situation of those fortifications, which are uniformly in the most fertile land of the country, indicates, that those who made them were an agricultural people ; and the remarkable care and skill, with which they were executed, afford traits of the genius of a people, who relied more on their military skill than on their numbers. The growth of the trees upon them is very compatible with the idea, that it is not more than three hundred years ago that they were abandoned.

These hints, however, are thrown out rather to excite inquiry, than by way of advancing any decided opinion on the subject. Having never met with any of the persons who had seen these white Americans, nor even received their testimony near the source, I have always entertained considerable doubts about the fact. Last evening, however, Mr. John Childs, of Jessamine-county, a gentleman with whom I have been long acquainted, and who is well known to be a man of veracity, communicated a relation to me, which, at all events, appears to merit serious attention.

After he had related it in conversation, I requested him to repeat it, and committed it to writing. It has certainly some internal marks of authenticity. The country which is described was altogether unknown, in Virginia, when the relation was given, and was probably very little known to the Shawnees-Indians. Yet the account of it agrees, very remarkably, with later discoveries. On the other hand, the story of the large animal, though by no means incredible, has something of the air of fable; and it does not satisfactorily appear, how the long period which the party were absent was spent: though Indians are, however, so much accustomed to loiter away their time, that many weeks, and even months, may probably have been spent in indolent repose.

Without detaining you any more with preliminary remarks, I will proceed to the narration, as I received it from Mr. Childs.

Maurice Griffith, a native of Wales, which country he left when he was about sixteen years of age, was taken a prisoner, by a party of Shawnees-Indians, about forty years ago, near Vosses' Fort, on the head of Roanoke river, in Virginia, and carried to the Shawnees nation. Having staid there about two years and a half, he found, that five young men of the tribe had a desire of attempting to explore the sources of the Missouri. He prevailed upon them to admit him as one of the party. They set out with six good rifles, and with six pounds of powder a-piece, of which they were, of course, very careful.

On reaching the mouth of the Missouri, they were struck with the extraordinary appearance, occasioned by the intermixture of the muddy waters of the Missouri, and the clear, transparent element of the Mississippi. They staid two or three days amusing themselves with the view of this novel sight: they then determined on the course which they should pursue, which happened to be so nearly in the course of the river, that they frequently came within sight of it, as they proceeded on their journey.

After travelling about thirty days, through pretty farming wood-land, they came into fine, open prairies, on which nothing grew but long, luxuriant grass. There was a succession of these, varying in size; some being eight or ten miles across, but one of them so long, that it occupied three days to travel through it. In passing through this large prairie, they were much distressed for water and provisions, for they

saw neither beast nor bird, and, though there was an abundance of salt-springs, fresh water was very scarce. In one of these prairies, the salt-springs ran into small ponds, in which, as the weather was hot, the water had sunk, and left the edges of the ponds so covered with salt, that they fully supplied themselves with that article, and might easily have collected bushels of it. As they were travelling through the prairies, they had likewise the good fortune to kill an animal, which was nine or ten feet high, and a bulk proportioned to its height. They had seen two of the same species before, and they saw four of them afterwards. They were swift footed, and they had neither tusks nor horns. After having passed through the long prairie, they made it a rule never to enter on one which they could not see across, till they had supplied themselves with a sufficiency of jerked venison, to last several days.

After having travelled a considerable time through the prairies, they came to very extensive lead-mines, where they melted the ore, and furnished themselves with what lead they wanted. They afterwards came to two copper-mines, one of which was three miles through; and, in several places, they met with rocks of copper-ore, as large as houses.

When about fifteen days' journey from the second copper-mine, they came in sight of white mountains, which, though it was in the heat of summer, appeared to them to be covered with snow. The sight naturally excited considerable astonishment; but, on their

approaching the mountains, they discovered, that, instead of snow, they were covered with immense bodies of white sand.

They had, in the mean time, passed through about ten nations of Indians, from whom they received very friendly treatment. It was the practice of the party to exercise the office of spokesman in rotation ; and when the language of any nation through which they passed was unknown to them, it was the duty of the spokesman, a duty in which the others never interfered, to convey their meaning by appropriate signs.

The labour of travelling through the deep sands of the mountains was excessive ; but, at length, they relieved themselves of this difficulty, by following the course of a shallow river, the bottom of which being level, they made their way to the top of the mountains, with tolerable convenience.

After passing the mountains, they entered a fine, fertile tract of land, which having travelled through for several days, they accidentally met with three white men, in the Indian dress. Griffith immediately understood their language, as it was pure Welch, though they occasionally made use of a few words, with which he was not acquainted. However, as it happened to be the turn of one of his Shawnees companions to act as spokesman, or interpreter, he preserved a profound silence, and never gave them any intimation that he understood the language of their new companions.

After proceeding with them four or five days' journey, they came to the village of these white men, where they found, that the whole nation were of the same colour, having all the European complexion. The three men took them through their village, for about the space of fifteen miles, when they came to the council-house, at which an assembly of the king and chief men of the nation was immediately held. The council lasted three days, and as the strangers were not supposed to be acquainted with their language, they were suffered to be present at their deliberations.

The great question before the council was, what conduct should be observed towards the strangers. From their fire-arms, their knives, and their tomahawks, it was concluded that they were a warlike people. It was conceived, that they were sent to look out for a country for their nation ; that if they were suffered to return, they might expect a body of powerful invaders ; but that if these six men were put to death, nothing would be known of their country, and they would still enjoy their possessions in security. It was finally determined that they should be put to death.

Griffith then thought that it was time for him to speak. He addressed the council in the Welch language. He informed them, that they had not been sent by any nation ; that they were actuated merely by private curiosity, they had no hostile intentions ; that it was their wish to trace the Missouri to its source ; and that they should return to their country,

satisfied with the discoveries they had made, without any wish to disturb the repose of their new acquaintances.

An instant astonishment glowed in the countenances, not only of the council, but of his Shawnees companions, who clearly saw that he was understood by the people of the country. Full confidence was at once given to his declarations ; the king advanced, and gave him his hand. They abandoned the design of putting him and his companions to death, and, from that moment, treated them with the utmost friendship. Griffith and the Shawnees continued eight months in the nation ; but were deterred from prosecuting their researches up the Missouri, by the advice of the people of the country, who informed them, that they had gone a twelve months journey up the river, but found it as large there, as it was in their own country.

As to the history of this people, he could learn nothing satisfactory. The only account they could give was, that their forefathers had come up the river from a very distant country. They had no books, no records, no writings. They intermixed with no other people by marriage : there was not a dark-skinned man in the nation. Their numbers were very considerable. There was a continued range of settlements on the river, for fifty miles, and there were, within this space, three large water-courses, which fell into the Missouri, on the banks of each of which, likewise, they were settled. He supposed that there must be fifty thousand men in the nation, capable of

bearing arms. Their cloathing was skins, well-dressed. Their houses were made of upright posts, and the bark of trees. The only implement they had to cut them with, were stone tomahawks. They had no iron; their arms were bows and arrows. They had some silver, which had been hammered with stones into coarse ornaments, but it did not appear to be pure. They had neither horses, cattle, sheep, hogs, nor any domestic nor tame animals. They lived by hunting. He said nothing about their religion.

Griffith and his companions had some large iron tomahawks with them. With these they cut down a tree, and prepared a canoe to return home in: but their tomahawks were so great a curiosity, and the people of the country were so eager to handle them, that their canoe was completed with very little labour. When this work was accomplished, they proposed to leave their new friends: Griffith, however, having promised to visit them again.

They descended the river with considerable speed, but amidst frequent dangers, from the rapidity of the current, particularly when passing through the White-Mountains. When they reached the Shawnees nation, they had been absent about two years and a half. Griffith supposed, that when they travelled, they went at the rate of about fifteen miles per day.

He staid but a few months with the Indians after his return, as a favourable opportunity offered itself

to him, to reach his friends in Virginia. He came, with a hunting party of Indians, to the head-waters of Coal-river, which runs into New-river, not far above the falls. There he left the Shawnees, and easily reached the settlements on Roanoke.

Mr. Childs knew him before he was taken prisoner, and saw him a few days after his return, when he narrated to him the preceding circumstances. Griffith was, universally, regarded as a steady, honest, man, and a man of strict veracity. Mr. Childs has always placed the utmost confidence in his account of himself and his travels, and has no more doubt of the truth of his relation, than if he had seen the whole himself. Whether Griffith be still alive or not, he does not know.

Whether his ideas be correct or not, we shall probably have a better opportunity of judging, on the return of Captains Lewis and Clark ; who, though they may not penetrate as far as Griffith alledged that he had done, will probably learn enough of the country to enable us to determine, whether the account given by Griffith be fiction or truth.

I am, Sir,
Your humble servant,
HARRY TOULMIN.

Frankford, December 12,
1804.

To the Editor of the Kentucky Palladium.

ADDITIONAL OBSERVATIONS AND CONJECTURES.
BY THE EDITOR.

The story of a Welch colonization, of America, has excited much curiosity, both in Europe and in the United-States. By many, it is believed; while, by others, it is thought unworthy of any attention. By reason of the present rapid progress of settlement in America, the time cannot be remote, when the truth or falsity of this story will be completely established. In the meanwhile, I do not hesitate to conjecture, *that no traces of the descendants of the Welch prince will ever be discovered in the western parts of North-America.*

It may not be improper to notice the tale upon which so many persons, in Europe, at least, rest their hopes of proving, in the most satisfactory manner, that the Welch have contributed to the peopling of America.

David Powel, a Welch historian, informs us, that on the decease of Owen Guyneth, King of North-Wales, a dispute arose among his sons, concerning the succession to the crown; and that Madoc, or Madog, one of the sons, “ weary of this contention, betook himself to sea, in quest of a more quiet settlement*.” We are informed, that “ he steered due west, leaving Ireland to the north, and arrived in an

* Dr. Robertson.

unknown country, which appeared to him so desirable, that he returned to Wales, and carried hither several of his adherents and companions. After this, neither Madog, nor his companions, were ever heard of more." The voyage of Madog is said to have been performed about the year 1170.

I have not seen Powel's work; but I learn, that this historian, who lived in the reign of Queen Elizabeth, and, consequently, at a great distance of time from the event which he records, adduces no better authority in support of the voyage, than a quotation from a Welch poet, "which proves no more, than that he (Madog) had distinguished himself by sea and land*." Some few Welch words, such as *gwrando*, to hearken, or listen, &c., are very feebly or unfortunately adduced by Powel, as circumstances favourable to the truth of the Welch emigration.

When we consider, "that the Welch were never a naval people; that the age in which Madog lived was peculiarly ignorant in navigation;" that the compass was then unknown; the story of the voyages of the Welch prince must, I think, be considered as extremely improbable. I am of opinion, with Mr. Pennant, that "the most which they could have attempted must have been a mere coasting voyage."

But, it may be said, we must appeal to facts; and that, independently of the verses of the Welch poet,

* Pennant's Arctic Zoology. Introduction, p. cclxiii, &c.

and the arguments of the Welch historian, it seems highly probable, that a colony of white people, who speak the Welch language, does actually exist in the western parts of North-America.

I cannot, I must confess, adopt this opinion. I readily allow, that the relations published by Mr. Toulmin, and many other persons, both in Europe and in America, are extremely curious. But these relations are very inconsistent with one another, particularly in what relates to the actual state of improvement of the supposed Welchmen. By some, we are told, that they are very far advanced in improvement ; by others, that their improvement is not at all greater than that of the Red-Men, or Indians of America. At one time, they are said to be in possession of manuscripts (and even *printed* books) ; at another time, nothing of this kind is found among them. It must be confessed, that Maurice Griffith's relation is, in several respects, more plausible than that of any preceding traveller : but it is not unincumbered with inconsistencies, which I do not deem it necessary to notice, in this place. His assertion, that the white men of the Missouri speak "pure Welch," even though this assertion be qualified by the observation, that "they occasionally made use of a few words, with which he was not acquainted," is, to me, one of the most improbable things that have ever been related of these people. His silence about their religion is altogether inexcusable. One would suppose, that a person of Griffith's inquisitive turn of mind, would hardly have omitted to make some in-

quiries respecting the religious institutions of a people, whom he considered as his countrymen. If these people be the descendants of Madog, *some* traces of the Christian religion may be expected to be discerned among them : for, I think, it requires many centuries to entirely efface from the memory of a people *all* vestiges of their religion ; especially from a people so tenacious of their language, and so little disposed to intermix with their neighbours, as the Welch-Indians are represented to be.

But Griffith's relation is, I think, worthy of some attention. I even think it not altogether improbable, that future researches will establish the fact, that there does exist, in the western parts of North-America, a race, or nation, of men, whose complexion is much fairer than that of the surrounding tribes of Indians ; and who speak a language abounding in Welch or Celtic words. But the *complete* establishment of these two points would not prove the establishment of the truth of the assertion, that Prince Madog had ever made a voyage to America ; or that a colony of Celts had, at any period, *prior to the discovery of America, by Columbus*, passed into this hemisphere *from Britain*.

It may be thought, from the statement published by Dr. Williams, and some other writers, on the subject, that the belief of the existence of a race of Welch-Indians in America, is generally admitted by the Red-Indians, and others. But this is far from being the case. The late Mr. M'Gilwray, a man of

no inconsiderable powers of mind, and whose curiosity was by no means confined to his own relatives, the Muscohge, or Creek-Indians, informed me, in the year 1790, that he knew nothing of the existence of any white people, in the tract of country beyond the Mississippi.

The following is an extract of a letter (dated Downing, June 14th, 1792) from my learned and excellent friend, the late Mr. Thomas Pennant, of Wales.

“ My countrymen are wild about the Padoucas, or Welch-Indians, descendants of Madog, now scattered about the upper parts of the Missouri. I am rather in disgrace; not having the warmest hopes of their discovery. Pray, what is your opinion, and that of your philosophers ?”

In answer to the above, I wrote a letter, of which the following is a part.

“ I have heard a great deal about the Welch-Indians. I very early imbibed your opinion, as delivered in your *Arctic Zoology**, and mentioned you, on the subject, in a little work†, which I published in England, at the age of * * * *. I do not know whether you have seen that work. I do *not* mean to

* See the Introduction to the work. Pages cclxiii, cclxiv.

† *Observations on Some Parts of Natural History*: to which is prefixed, an account of several remarkable vestiges, of an ancient date, which have been discovered in different parts of North-America. Part i. London: 1787.

hint that it is worthy of your attention. I, certainly, think there is some foundation for the story ; but I have no doubt, that the whole affair will turn out very different from a discovery of Madog's descendants in America.

" I have said, that I think there is some ground for the story. I shall explain myself. You know that many of the first visitors of the new-world were struck with the resemblance which subsists between some of the American nations and the Jews. Some Hebrew words were found in this continent, as they have been every-where else. The Americans were, now, said to be the descendants of the Jews, and Adair laboured very hard to prove the matter, in a ponderous quarto, which few people read, because it is big with system and extravagance, though, indeed, it contains some curious and accurate matter. In like manner, in the languages of some of the American tribes, there are found some words which are a good deal analogous to words in the languages of the ancient Celts. Wafer, who was a very respectable observer, if we consider his occupation in life, mentions the coincidence which he found between the language of the Indians of Darien, and that of the Highland-Scots ; and I could produce instances of this coincidence. Some Greek words are, also, found in certain of the American languages. I would not strain a point so much as some writers have, who mention the coincidence which subsists between the Greek *Theos*, and the Mexican *Teotl*. The word Potowmack, which is the name of one of our great

rivers, is a good deal like the Greek *Potomas**. These words (perhaps, they are accidental resemblances) have given rise to some of the numerous theories which we have had concerning the peopling of this great continent; and I doubt not, that some * * * *, or person who understood the Welch language, finding Celtic words (a language spoken by the Welch) among the Americans, in the fulness of his zeal, would bring his countrymen among Padoucas, Apaches, &c.

" Such, I believe, has been the origin of this wonderful story. I presume, that were an ignorant Highlander to visit the Darien-Indians, or some other American tribes, he would fancy himself among his countrymen, whom painting, exposure to the sun, &c., he might suppose, had exalted, or degraded, to their present tinge. I lately conversed with an old Highlander, who said, that the Indians speak the Highland language. Some Highland words were mentioned by him; * * * * one word * * * * I recollect; the word *Teine*, which in the Highland language, he said, signified *fire*: now our Delaware-Indians call fire *Tindey*: the resemblance, in sound, is, certainly, not small. The Celts have, undoubtedly, been very widely spread over the globe: I believe, they existed in this country, and that their des-

* The Abbé Molina (in his *Compendio de la Historia Civil del Reyno de Chile*, &c., Parte Segunda, p. 334, 335) has pointed out some very striking instances of resemblance between the Greek and Chilese languages. He has also pointed out some resemblances between the Latin and the Chilese.—February 19th, 1805.

cendants are some of the present tribes*. That Celtic words should be found among the Americans, when Celtic words are found almost every where else, is not, I think, to be wondered at.”

XV. Experiments on the Gymnotus Electricus, or Electrical Eel, made at Philadelphia, about the year 1770, by the late Mr. RITTENHOUSE, Mr. E. KINNERSLY, and some other gentlemen. Communicated to the EDITOR of this Journal, by Mr. RITTENHOUSE.

August 17th. WE drew off part of the water wherein the fish lay, leaving not quite enough to cover him, and placed the vessel on an electric stand. Over it we suspended, by silk lines, a thick brass wire, about twenty inches long, with a bullet screwed on at each end. Two pith balls were suspended on this wire, and a brass chain, at the lower end of which was a ball of cork, with several sharp brass points. These points were brought down low enough to touch the fish; and a person, on another electric stand, with his cane moved the fish towards the points, and made it touch them frequently: but the pith balls did not separate, nor any signs of electricity appear.

* Very considerable fragments of the Celtic dialects are still preserved in America; particularly, if I do not mistake, among the Nanticokes and the Katahba, or Katawbas.—February 19th, 1805.

Experiment 2. We then removed the apparatus suspended over the fish, and a person, standing on the electric stool, held in one hand a piece of wood, to which pith balls were hung, and with the other touched, or rather grasped the fish, for a slight touch seldom succeeds, by which means he received repeated shocks in that hand, but the balls did not separate.

Experiment 3. We formed a circuit of eight or ten persons, by their joining hands, as in the Leyden experiment. The first person touched the fish about the head, and, at the same time, the last person touched it, towards the tail. The shock was felt by every person in the circuit, and probably with equal force.

Experiment 4. We formed a circuit as before, excepting that two of the persons, instead of joining hands, took hold of a glass tube. In this case, the shock was felt by none but the first and last person, and by them in the hand and arm only, wherewith they touched the fish.

Experiment 5. Instead of the glass tube, two persons held between them a small chain, made of brass wire. The shock was felt by the first and last person only, as before. This experiment was often repeated, and always with the same success, even when the chain had been first wetted with water.

Experiment 6. Mr. Kinnersly took a coated phial, such as is used in electrical experiments, and hold-

ing the phial in his left hand, took hold of the hand of another person with his right, who put his other hand in the water surrounding the fish. Through the cork of the phial passed a thick brass wire, which, six or seven inches above the cork, was bent in the form of a semicircle, and, on its outward end was fixed a bullet, with which Mr. Kinnersly touched the head of the fish: whereupon each person felt a severe shock, through both arms.

Experiment 7. In consequence of the preceding experiment, it was suggested, by a person present, who seemed unwilling to suppose the property of this animal the same with electricity, that though the shock would not be conducted by a glass tube, yet it might, perhaps, pass very readily through a thin piece of glass, such as the phial was. To determine this, we placed a thin piece of window-glass, between the fingers of a first and second person. The second person took hold of the hand of a third person, who with his other hand touched the fish, whilst the first person held one hand in the water. The first and third person felt a shock in one arm only, but the second person not at all.

Experiment 8. We put a living fish, eight or nine inches long, into the water with the electric eel. After swimming about a short time, it happened to come near the head of the electric fish, and presently turned up its belly, and lay motionless; but, on taking it out, in a few minutes it revived. A very small

charge of the electrical phial, made to pass through the fish, has the same effect.

August 18th. Experiment 9. We again formed a circuit, with a brass chain, wetted with water, two persons holding it between them, whilst one of them held a hand in the water, and the other touched the fish. After several trials, in vain, we got a smart shock to pass through it. This success encouraged us to make

Experiment 10. Mr. Kinnersly held a dry brass chain, eighteen inches long, with one hand, and, with the other, took hold of another person, who touched the fish. A third person held the opposite end of the chain, and put his other hand into the water. After many trials, a violent shock passed through the circuit, and each person felt it, in both arms. We were now satisfied, that a chain of wire would conduct a shock from the fish, as well as from the electric phial, provided the fish exerted this wonderful power as strongly as he sometimes did; for want of which we were often disappointed; the electric matter having an opportunity of returning through the water to the fish, as well as through the other conductors provided for it.

Experiment 11. We placed a coated phial in the circuit, one person holding it by the coating, and another by the hook, but could not obtain a shock through it: perhaps for the reason above-mentioned.

N. B. The remainder of this paper, with additional observations, will be published in a future number of the Journal.

XVI. *On the Use of the Prinos verticillatus, or Black-Alder, in Intermittent-Fever, and other diseases. In a letter to the EDITOR, from Dr. AMOS GREGG, Jun., of Bristol, in Pennsylvania.*

DEAR SIR,

SHOULD the following observations on the use of the *Prinos verticillatus* be deemed worthy of a place in your *Journal*, they are at your service.

"The natural infirmities of mankind, and, perhaps, especially the vices to which civilized nations are so propense, will always render Tonics most necessary implements in the hands of physicians." No person doubts the indispensable necessity of this class of medicines.

From the sensible qualities of the *Prinos*, but more particularly from what you have said (in your *Collections**), I was induced to give the vegetable a trial in disease. My experience is confined to its use in remitting and intermitting fevers; and it was the bark alone which I used.

September 4th, 1804. The first case was that of a boy, aged fourteen, in remitting fever. Four days

* Part Second. Pages 5 and 6.

before I saw him, he was seized with vomiting and pain in the bowels. On the second day, he was seized with chill and fever, attended with pain in the back, head, &c.: he was costive, his skin hot; without thirst, his tongue furred, attended with delirium. There had been no remission for more than twenty-four hours when I saw him. In the afternoon, I drew six ounces of blood, and ordered a draught of antimonial wine and laudanum at bed-time, and the next morning gave him a cathartic of the root of the *Podophyllum peltatum* (May-apple), &c., which brought on a complete intermission.

The decoction of the *Prinos* was now ordered, which entirely prevented a return. He took three drams, in six ounces of water.

The second case was that of a woman with quotidian fever, fixed pain in the side; hot skin, small hard pulse, costiveness, and painful respiration. A purgative of the May-apple, &c., was exhibited, and afterwards tonics, such as the bark of the *Cornus sericea*, camphor, laudanum, &c., were given, for one week, with no material advantage: a chill came on, at three o'clock in the afternoon, and the fever lasted several hours. The pulse became softer.

I now ordered one dram of the pulverised bark of the *Prinos*, to be given every hour, during the apyrexia. She took only three powders, and suffered no relapse.

The third case was that of a child, aged one year, labouring under a quotidian remittent, with habitual diarrhoea. A cathartic of calomel and may-apple was prescribed, and then the decoction, as freely as the stomach would bear.

The very first day, the fever was kept off, and neither chill nor fever returned.

In a girl, aged seven years, five scruples of the powdered bark were sufficient to keep off the paroxysms of a quotidian fever, of two weeks continuance.

Having been so successful in the first few cases, I prescribed the Prinos with more confidence, and more generally; and I can say, that I always used it with advantage, and commonly with the most complete success.

When it is exhibited in powder, I am disposed to believe, it is nearly equal to the celebrated bark of Peru. When the stomach would retain the powder, I did not fail in a single instance; and in one case only was it rejected.

Like the Peruvian bark, it succeeded best when it was given immediately after the sweating stage.

In general, I gave it alone; but to prevent diarrhoea, an effect it occasionally produced (though less commonly than the Peruvian bark), and to prevent pain, I sometimes added a few drops of laudanum.





In one instance only I applied it to the skin.

One of my patients, a child, while using the decoction of Prinos, discharged Worms. It is no uncommon thing to see worms discharged during fevers; and future experiments must decide, whether, in this respect, the Prinos is superior to the other Bitter tonics.

The bark of this vegetable makes an agreeable bitter, with proof-spirit.

Bristol, January 28th, 1805.

XVII. *Description of an American species of Certhia, or Creeper. Illustrated by a Plate. Communicated to the EDITOR, by Mr. WILLIAM BARTRAM.*

C. rectricibus inequalibus, apice subulatis, subnudis.

Bill long, slender, bent downwards, sharp-pointed, and somewhat flexible. The under mandible flesh-coloured next its base.

Upper side of the head, neck, and back of a dusky brown-colour; the feathers dark in their middle, and edged with light brown, or clay-colour.

Cheeks, lower part of the back, and upper coverts of the tail, of a bright-yellowish-clay colour. Throat, breast, belly, and under coverts of the tail white.

Wings of a dark-dusky or black colour, variegated with oblique bars of white on the primary and secondary quill-feathers. The tips of the feathers of the spurious wing (*ala notha*), and the first and second coverts are likewise elegantly marked with white.

Tail of a reddish-brick, or cinnamon colour: the feathers of unequal length; the middle or upper one longest, the others, on each side, gradually diminishing: each feather terminates in a slender sharp point, which (like the Woodpecker's) assists the bird in climbing and ascending trees.

Legs and feet of a dark flesh-colour, and formed as in other birds of this family, having four toes, three forward, and one backward, armed with strong talons.

Length of the bird, from the bill to the extremity of the tail, about five inches.

This species of Certhia is an autumnal bird of passage, from the north. They arrive, and appear in the environs of Philadelphia about the first of October (sooner or later, according to the severity of the season), and continue with us during the winter, if it be temperate. Or they pass on, southerly, as far as Carolina and Florida, where they winter, but return northerly in the spring, to breed, and rear their young. I have not heard of their breeding in Penn-

sylvania: yet they may breed in the most northern district of the state.

Their place of residence is in the woods, or high forests, where we see them climbing up, and running about, the trunks of large trees, searching the crevices of the bark for spiders and other insects, which constitute their food. And for this purpose, their slender, crooked beak is well adapted. They utter a feeble, chirping note.

This species of Certhia has the form and habits of the woodpecker, except in the position of its toes. Neither is its bill, like that of the woodpecker, strong, and shaped for the purpose of perforating wood.

We know nothing, as yet, of the construction of its nest, or its manner of breeding.

Kingsess, December 27th, 1804.

This species of Certhia appears to be nearly allied to the Certhia familiaris of Linnæus; Le Grimpereau of Buffon; the European Creeper of Pennant. If so, it is mentioned, by the last-named naturalist, as a native of North-America, Russia, Siberia, and Sweden. I suspect, it is merely a variety of the Certhia familiaris; but, even as such, a description and figure of it will not be unacceptable to the American lover of natural history.

The annexed engraving (See Plate I) is correctly copied from an elegant drawing by Miss Anne Bartram, of Kingsess, near Philadelphia.

EDITOR.

XVIII. *Facts relative to the torpid state of the North-American Alligator. By the EDITOR.*

IT has not, I think, been remarked by the generality of the writers on natural history, that the North-American Alligator passes, during the prevalence of cold weather, into the torpid state. This, however, is, unquestionably, the case in some parts of the continent.

Mr. Bossu, a French writer, after telling us, that these animals are numerous in the Red-River, one of the western branches of the Mississippi, says, "they are torpid during the cold weather, and lie in the mud with their mouths open, into which the fish enter as into a funnel, and neither advance nor go back. The Indians then get upon their backs, and kill them by striking their heads with hatchets, and this is a kind of diversion for them*."

Dr. Forster, the translator of the work, observes on the preceding passage, that the "circumstance of the alligator's being torpid during winter, is quite new,

* Travels through that part of North-America formerly called Louisiana. English translation, vol. i. p. 367. London: 1771.

and very remarkable for natural history. It seems (he adds) almost all the class of animals called *amphibia* by Dr. Linnæus, when found in cold climates, grow torpid during winter."

In addition to the authority of Mr. Bossu, I may here mention the following fact, which was communicated to me, about the year 1785, by a Mr. Graham, at that time a very intelligent student of medicine, in the University of Pennsylvania :

"The Alligator, having previously swallowed a number of pine-knots, retires to his hole, where he remains in a torpid state, during the severity of winter. If killed at this season, these knots are found highly polished by their trituration, one against the other, in the animal's stomach, as I have, more than once, heard from men of undoubted veracity, who had been concerned in the fact. Indeed, this is so notorious in those parts in which these creatures abound, that the digestion of the alligator's stomach is proverbial amongst the multitude, who deride its insipidity in the choice of such food, though, I presume, this it does instinctively, for some purpose unaccounted for by naturalists, and which, perhaps, is beyond the limits of human ken."

The fact, related by Mr. Graham, relates to the alligator of the Carolinas, in which parts of the United-States this animal is very common. By another gentleman, I have been informed, that the pine-knots which the alligators swallow are generally such

as are very abundant in turpentine. I have also been assured, by my friend, Mr. William Bartram, that he has seen a brick-bat, that was taken out of the stomach of an alligator, and that it was worn quite round.

Mr. Lawson says, that the alligator is not seen to the north of North-Carolina. They are very common at Cape-Fear, in latitude 34. One twelve feet in length has been seen at this place. On the Atlantic side of the United-States, I am not able to trace them farther than the "Alligator Dismal Swamp," which is between Edenton and Newbern, in North-Carolina. The mouth of the Red-River is nearly in latitude 31.

Within the tract of country just mentioned, the alligator, obeying the influence of the climate, passes into the torpid state. In North-Carolina, this takes place about the middle of November, sooner or later, according to the state of the season. Whether the animal becomes torpid in more southern parts of the continent, I have not been able to learn. On the river St. John, in East-Florida, they have been seen, awake, even in the middle of winter: but it was remarked, that they seemed dull, and stupid. It has also been observed, that they are accustomed to frequent the warm springs, which are so abundant in this part of the continent; and that they are fond of lying in these springs. Perhaps, the heat of these springs may be sufficient to prevent them from becoming torpid. But it must be observed, that a de-

ficiency of heat is not the only cause of the torpid condition of animals.

It may not, perhaps, be an easy task to assign a satisfactory cause for the singular instinctive appetite, which leads the alligator, before going into the torpid state, to swallow pine-knots, and other somewhat similar substances. But I apprehend, that these substances, when taken in by the animal, act, in some measure, by keeping up a certain degree of action in its stomach, and, consequently, in every part of the system, and thereby prevent the death of the animal, which might, otherwise, be destroyed, by the long-continued application of cold. Some facts, mentioned by Dr. Pallas, though they respect a very different family of animals, render this conjecture not a little plausible*.

This subject is worthy of more attention. In particular, it will be well to inquire, whether the alligator does swallow pine-knots, stones, &c., in those parts of America, in which it does not pass into the torpid state.

February 20th, 1805.

* *Historia Glirium, &c.*

XIX. *On the Powers of Steam, in communicating heat to bodies, with which it comes in contact.* By ROBERT M'CAUSLAND, M. D., and by him communicated to the EDITOR, in 1787.

IT is, I believe, to Dr. Black that the world is indebted for new ideas, and new language, in respect to some of the phenomena of heat. The clue which he has furnished is, perhaps, more extensive in its effects than some have supposed ; and there are many appearances in nature, which, although they have long been perfectly familiar to us, do, nevertheless, seem to be inexplicable upon any other principles than those which have, some time ago, been laid down by him. He has shown,

1st. That at the very instant in which bodies pass from the state of vapour to the state of liquid, a large quantity of heat emerges from them, and passes immediately into any bodies that happen to be contiguous.

2dly. That this same liquid, in passing into a state of solidity, again parts with a quantity of heat.

3dly. That before a solid can acquire a liquid state, it must absorb a large quantity of heat ; which supply of heat, being drawn from surrounding bodies, will have considerable effects in lowering their temperature.

4thly. That if this liquor is converted into vapour, it will previously absorb an additional quantity of heat, which heat will again emerge, if it comes in contact with any body which is capable of condensing it into drops.

It appears, therefore, that the presence of a certain quantity of heat is essential to fluidity, as no body can acquire that form, until it has had time to draw the necessary supply of heat from surrounding bodies; and as this same quantity of heat immediately escapes from the fluid, on its returning to its state of solidity. This portion of heat seems likewise to exhaust all its powers, in producing the arrangement of particles essential to fluidity, for it does not appear to affect the thermometer in the least, and hence has, by Dr. Black, been termed *Latent Heat*. The presence of a still larger quantity of heat is requisite for a state of vapour, as has been before remarked,

The cold of Canada renders the use of stoves almost indispensable; and the poorer sort, from the want of fire-places, or to save fuel, are frequently obliged to dress all their victuals upon the stove. Soon after my arrival in that country, I observed, that whenever they wished to heat a kettle of water very quickly, they threw two or three spoonfuls of water upon the stove, and immediately placed the kettle upon it, whilst it was bubbling up. Dr. Black's theory had not penetrated into Canada, and no one seemed even to have guessed at the reason of this phenomenon; nevertheless, the old women con-

tinued to heat their kettles with as much facility as if they had studied all their lives under that ingenious professor.

To throw cold water upon a hot stove, in order to make it heat any thing more quickly, seemed, at first view, not a little extraordinary; but, upon considering the matter a little more attentively, I immediately perceived, that this was perfectly consonant to the doctrines of heat, delivered by Professor Black, and that it was even one of the strongest illustrations of them. Although the operation is, in itself, perfectly simple, yet, in order to make the following observations more clearly understood, it may not be amiss to give a circumstantial description of it, particularly for the benefit of those who have not seen it performed.

It succeeds best with a stove which is not perfectly smooth and even, because the water has an opportunity of lodging between the inequalities, and is not so soon dissipated by the heat of the stove. Two or three spoonfuls of water, either hot or cold, being thrown on the top of the stove, the kettle of water is instantly placed upon it, whilst it is hissing or bubbling up.

As soon as the steam of this water strikes against the bottom of the kettle, it is immediately condensed, and, at the same instant, a large quantity of heat emerges from it, and passes into the kettle of water, where its effects are quickly perceived. The steam,

being thus condensed, falls down in drops upon the stove, by which it is again raised in vapour, and applied to the bottom of the kettle, where it is condensed as before.

This small quantity of water, alternately suffering evaporation and condensation, is, by this means, not dissipated for many minutes, even by a very hot stove; but, passing constantly backwards and forwards, between the stove and the kettle, becomes a carrier of heat, in the same manner that pieces of gold-leaf, &c., become carriers of electricity between two plates, one being suspended over the other. To prove that this process actually takes place, we have only to raise the kettle from the stove; the water is dissipated in an instant, having no longer any thing to condense its vapour. To set this phenomenon in a clear point of view, and to show how quickly water may, by this method, be heated, I got two pewter basons, of the same shape, size, and thickness. Into each of these I put thirty-four ounces of water, the temperature of which was 33, by Fahrenheit's thermometer, or one degree above the freezing point. A large spoonful of water being poured upon a stove, very moderately heated, one of the basons was immediately placed upon it. The other bason was, at the same time, set on the same stove, but without any water under it. In four minutes, the water in the bason, to which the steam had been applied, had rose to 60, whilst the other had only got to 48; and, in five minutes, they were at 68 and 50.

That no deception might arise, from the bottom of one of the basons being thicker than the other, or from one part of the stove, on which they stood, being hotter than the other, I now repeated the experiment, changing the basons, and the places on which they were set. In four minutes, the bason heated by steam rose to 80, the other one being only at 45. In seven minutes, they were at 94 and 54; and in nine minutes, the difference was 102 and 63.

From these experiments, the powers of steam in communicating heat appear very evident; and it seems probable, that these powers might be applicable to some useful purposes in the arts. Dr. Black (as was before observed) has shown, that solid bodies, in passing into a state of fluidity, absorb a large quantity of heat from substances with which they are in contact; hence it follows, that if this liquification can be produced by any other means than external heat, these contiguous substances will be robbed of their heat, which is powerfully absorbed by the liquifying body. Upon this principle, he explains the artificial cold produced by the solution of salts, and by the common freezing mixtures. He has also shown, that fluids, in passing into a state of vapour, absorb a further quantity of heat from contiguous bodies.

Upon this principle depends the fall of a thermometer, dipped in water, and then exposed to the wind; the method of cooling bottles of water, on the coast of Coromandel, by exposing them in a wet cloth, and hanging them up, exposed to the hot land wind,

which comes over the sands lying between the Balaghat-Mountains and the sea-coast ; the effect of damp clothes on the human body : for without having recourse to this method of reasoning, it is difficult to conceive why a damped shirt should have more pernicious effects, than immersing the body into a water bath, of the same temperature.

It would be needless to enumerate all the particular phenomena which are to be explained on these principles ; but I cannot help taking notice of one, as it is of a very singular nature, and as it is a strong illustration of this system. By a letter from Sir Robert Barker, published in the Philosophical Transactions for 1775, it appears, that ice is made, in considerable quantity, at Allahabad, Calcutta, and other parts of the East-Indies, where natural ice was never seen, and where the thermometer was never known to sink so low as the freezing point.

He informs us, that, upon a large open plain, three or four excavations are made in the earth, each about thirty feet square, and two feet deep, the bottoms of which are strewed with a pretty thick layer of sugar-canapes, or of the dried stalks of Indian-corn. Upon this bed is placed a number of shallow earthen pans, filled with water, which has been previously boiled. These pans are unglazed, scarce a quarter of an inch thick, about an inch and a quarter in depth, and made of an earth so porous, that it is visible from the exterior part of the pans, that the water has penetrated the whole substance.

These pans are placed in the evening, during the months of December, January, and February; and in the morning, the water in them is often found a solid piece of ice. Sir Robert does not attribute this to artificial cold, produced by the conversion of water into vapour, but seems to conjecture, that it may arise either from the natural heat of the water escaping through the porous vessels*, or else from the cold air finding an easy entrance, through the same pores, into the water.

With regard to the first supposition, it is reasonable to imagine, that the natural heat of the water would make its escape more readily from the upper surface, where it would meet with no impediment, than through the sides of the vessel; consequently, that the freezing would take place in any shallow vessel, although it were not so porous as to allow the water to transude. This, however, does not appear to be the case. It must likewise be observed, that as heat always tends to preserve an equilibrium in contiguous bodies, it must necessarily follow, that as soon as the temperature of the water had fallen down

* Whether this is precisely his meaning, with regard to the first supposition, I will not take upon me to determine. I shall transcribe the passage, in his own words, and leave the reader to judge for himself. “The spongy nature of the sugar-canæ, or stems of the Indian-corn, appears well calculated to give a passage under the pans to the cold air; which, acting on the waters or parts of the vessels, may carry off, by evaporation, a proportion of the heat.” As to the second supposition of the cold entering, his words do not admit of a doubt.

to that of the external air, which is allowed never to go to the freezing point, all further escape of heat must cease, and consequently the freezing could never take place.

With respect to the second supposition, of the cold entering through the pores of the vessel, it must first be remarked, that the consideration of cold, as a positive body or quality, seems to have lost ground greatly. But even admitting this theory, still it is to be remembered, that this air itself is allowed to be always warmer than the freezing point. In endeavouring to account for this phenomenon, we would say, that the water, transuding through the porous vessels, is converted into vapour; and, in acquiring that form, absorbs a large quantity of heat from the water in the pans. By a continuance of this process, the water is, at last, robbed of its heat, to such a degree as to freeze.

There is one circumstance, mentioned by Sir Robert, which seems strongly to confirm this supposition. He observes, that the process of making ice will not succeed in changes of winds, and cloudy weather; and that, in a very sharp, cold night, he has been surprised to find little or no ice formed; while, on the contrary, in a clear, serene night, with very little dew, though sensibly warmer, the contents of the pan have been frozen into one solid cake.

It is well known, that evaporation goes on most quickly in a clear dry air; and that when the atmos-

phere is loaded with clouds or moisture, it is considerably diminished. This shows evidently, that although the air is not very cold, yet if it is in a fit state to promote the evaporation of the moisture which transudes the vessel, it will succeed in producing ice. Supposing that these cloudy nights had always been windy likewise, still it is scarcely to be supposed, that the water, in such small vessels, placed at least a foot below the surface of the earth, could suffer such agitation as to prevent freezing; more especially when we consider, that some degree of motion in a fluid is found, by experiment, to be rather favourable to its freezing*. In large bodies of water, such as rivers, lakes, &c., the reverse must necessarily take place, because all agitation tends to mix the coldest parts of the water with those which are less cold; so that unless the winter is long enough to reduce the whole body to 32 degrees, no freezing can take place whilst there is any considerable agitation.

* Dr. Black has found, that water which has been previously boiled freezes sooner than unboiled water; but if the unboiled water is stirred about, it will freeze as soon, or nearly as soon, as the boiled water. Muschenbrock has also observed, that water would fall below 32 without freezing, provided it was kept perfectly motionless; but if it was agitated, it was immediately converted into ice. Fahrenheit inclosed water, purged of its air, in glass globes hermetically sealed, and observed, that if they were kept motionless, the water became colder than the freezing point, without losing its fluidity; but as soon as the globes were shook or stirred, a sudden congelation ensued.

XX. Observations relative to the Wheat-Moth of Pennsylvania, and other parts of the United-States. In a letter to the EDITOR, from Mr. WILLIAM MASON WALMSLEY, of Byberry, in Pennsylvania.

DEAR SIR,

DURING the short stay that my brother made with us, previous to his departure for Chambersburg, he was anxious to obtain some information relative to the insect which has so much infested our wheat, and some other grains, for the two last seasons: but his engagements were such as to deprive him of the opportunity. He, however, left an injunction on me, to prosecute the inquiry, with which I have endeavoured to comply. Had I been better acquainted with Natural History in general, I should, doubtless, have been more successful. Notwithstanding the small progress (if any) that I have made, I submit the result to your perusal.

I am not capable of giving any thing like a systematic description of the insect; nor do I suppose this would be necessary, as you have, doubtless, examined it yourself.

I cannot learn, that it was ever seen, in this part of the country, until about nineteen years ago. This information I have from Mr. Shoemaker, a very respectable old gentleman, and a man of observation. He supposes, that it came from the southward: but I am not acquainted with his reasons for this conjecture.

ture. I think it was in the year 1784, that they appeared in considerable abundance, after harvest, and continued until the setting in of the winter, when they all disappeared. It was supposed, that they were destroyed by the frosts, the cold of that winter having been rather more severe than those of ordinary winters. From that time, none of these insects were seen until 1794 or 1795. At this time, the damage experienced from them was very considerable, and entirely confined within a small space, about the mouth of Pennypack-Creek*. It was universally believed, that they were introduced in some wheat, that was brought to the mill, from one of the southern states (I think, Virginia); but the ensuing winter totally destroyed them.

From the year 1794 or 1795, I cannot learn, that a single one of them was seen, until the year 1801. Some few were observed in the granaries, after the harvest of this year; but they did not excite the attention of the people before the following year. Indeed, so little notice was taken of them, that the circumstance of their being seen was only recalled by the appearance of so great a number in 1802.

In the month of August of this year, they seemed to make their appearance very suddenly: but, probably, they were overlooked for a time, from remissness in observation. They were first seen on the

* A branch of the Delaware: its mouth is about nine miles above Philadelphia. EDITOR.

sun-warmed side of the wheat-barracks ; and afterwards in the granaries. A few were seen in the Rye, as also in the Barley, but the Wheat suffered much the most.

These insects continued rather increasing in numbers, until the weather began to grow cold, when there was an apparent diminution of them. After the winter had set in, they were to be seen no more. What became of them, I know not : whether they were completely destroyed, or were again revived by the heats of the returning summer.

We now hoped, that the winter had entirely relieved us from this evil ; and our hopes became more confident as the season advanced ; for the few that made their appearance were only to be seen in the granaries, and were less vigorous than those of the preceding autumn.

A short time after the harvest had been gathered in, a considerable alarm was excited by them : great swarms of them were seen when the stacks were in the least disturbed, and the rye fared but little, if any, better than the wheat, insomuch that the farmers found it necessary to thrash their grain, and to have it ground into flour. The moths continued very numerous until about the beginning of October, when they began to diminish, and have now entirely disappeared.

With respect to the extent of country over which they have spread, I can say but little, especially as to what regards their range southward, but I believe that we feel their influence more sensibly in this place, than on either side of us. Northward, or more strictly north-east, of Philadelphia, they seem to increase gradually as they approach to Byberry*. North-eastward of us, they are not so numerous, but they are increasing, and progressing on the same course. Last season, they were bounded on the north by Neshamany-Creek† (a very few instances excepted). This season, they have been considerably troublesome in the township of Middletown, especially in that part within the vicinity of Mitchell's-Mills.

The observation of their being more numerous in the neighbourhood of mills *generally* holds good. Hence, the prevailing idea of the spread of these insects by the medium of wheat, brought from the southward.

Concerning the habits of the moth I know still less than of its range over the country. Some have supposed, that the grain which has been raised upon a sandy soil, suffered most. Indeed, the opinion would be favoured by the total destruction of Mr. Miles's grain, which grew upon such a soil, were it not that other grain, from a similar soil, was but little affected.

* This township is about fourteen miles to the north-east of Philadelphia. EDITOR.

† A branch of the Delaware, into which it empties itself, at the distance of about fifteen miles above Philadelphia. EDITOR.

Upon the whole, I would not undertake to say, that any difference can be observed relative to soil.

We have not been acquainted with them a sufficient length of time, to mark the effects of seasons. I have already observed, that the insect is not seen in the fields at any time previous to, or during, harvest. From this, it would appear, that the egg *is not* deposited in the grain during its unripe state. A variety of circumstances corroborate this opinion, but as many oppose it. I shall here mention such facts as I have obtained from good authority.

One of our neighbours, finding his wheat likely to suffer, packed a quantity of it in a large cask, and carefully covered it. Some time after, when he uncovered it, he perceived about eight or ten of the moths on the surface of the wheat, but not deeper. At every uncovering, the number increased, but did not essentially injure the grain; while the grain uncovered was very considerably damaged. A large quantity of wheat was kept in a granary, about nine months, without the least appearance of the insect. They, then, began gradually to appear, and, in a short time, became so numerous, as to oblige the owner to have it ground.

One load of wheat was taken from the field of one of my neighbours, and stacked at about half a mile distance from his grain, or any other grain. This stacked grain was not, at all, affected by the moth, while his other grain was very much injured. A quantity of

wheat was put in a garret, early after harvest. About one half of this quantity was left in bags; the remainder was spread upon the floor. This last soon became full of the insect, while that in the bags was entirely free from it, except a very few which appeared the first three or four days, and were driven away.

Mr. Miles (whose wheat, I have already observed, was entirely destroyed) found a small handful of wheat-ears in his field, about eight or ten days after harvest. These he took home, and kept in his parlour, for a considerable time. In this wheat, although it was examined with the greatest attention, not the least appearance of the moth could be observed.

A quantity of Barley, kept for the use of the family, has been lying in the garret of one of our neighbours, for nearly four years. In the autumn of 1802, a few of the grains were found hollow, and a number of the insects among them. This present season (1803), their numbers, in the same barley, were very considerable.

A quantity of wheat, among which the moths were very numerous, was thrown into water, with the view to separate the light grains, which were thrown away: the remainder, after having been dried in the sunshine, was laid in a granary, where it has been kept for nearly six months, without any appearance of the moth. This would seem rather to favour the opinion, that the egg *is* deposited at some stated period. Whether the same effects will always occur, under

similar circumstances, must be determined by *experiments*.

Whether the stacking of grain influences the production of the moth, I cannot say. In the centre of large stacks, it frequently happens, that not a single insect is to be seen. This, I believe, is more generally the case when the grain has been placed in large and dark barns. On the contrary, several instances have happened (one of which came under my own observation), that while the middle of the mow was almost destroyed by the moths, the injury sustained near its surface was, comparatively, very small.

Upon examining the grain in the ear, after it has been, for some time, in the stack, it rarely happens that any thing preternatural can be seen. Stripping off the grain, we, now and then, come across one, the glume of which is perforated : the grain within this glume appears perfectly solid, externally ; nevertheless, a *larva*, or worm, is, unquestionably, within.

I cannot determine, whether the larva has, or has not, any defined position in the grain ; but of one thing I am certain, that it does not come out at *any one* particular point. However, I believe, it more frequently comes out from the small, or bristly, end, than at any other place.

Upon cutting open the grain, the larva may be observed, from the size of the smallest pin-head (when less than this, it can hardly be distinguished from

the *farina*, or mealy part, itself) to its finished size. How long it takes to acquire this size, after its introduction into the grain, depends, I believe, upon circumstances. During the last winter, I kept a quantity of wheat in a vial, and frequently examined some of the grains; but I could perceive no progress in the larva, during that season. In the spring, however, several of them came out. Yet, as so many come out, and leave the grains hollow, soon after harvest, it would seem, that they acquired their growth, in a short time.

When the larva first comes out, it is very feeble: indeed, even in its finished state, it is rather delicate. At first, it has no appearance of wings; but, in a short time, it unfolds them, and flies off, or creeps away.

This is the sum of the information that I have been able to obtain.

I am, dear Sir,

Your's, &c.,

W.M. MASON WALMSLEY.

*Byberry (Pennsylvania), November 28th,
1803.*

NOTE.

The insect which is the subject of the preceding observations, is a species of the genus *Phalæna* of Linnæus. It belongs to the sixth section of this vast family of insects, denominated, by the same naturalist, *Tineæ*. I am not certain, whether it has been described by any systematic naturalist: but it is nearly allied (as to its habits) to the *Phalæna* (*Tinea*) *granella* of the Swedish naturalist, of which he speaks as follows: “*Habitat in Frumentorum granariis semina rodens conglomeransque, hyeme parietes adscendens**.”

Of the American wheat-moth it is my intention to give a more circumstantial account, in another place; probably in connection with an extensive “*Memoir on a number of the Pernicious Insects of the United-States,*” which was lately honoured with the MAGELLANIC MEDAL of the AMERICAN PHILOSOPHICAL SOCIETY. In the meanwhile, I have deemed Mr. Walmsley’s paper highly worthy of preservation, as an original document.

I beg leave, in this place, to mention the names of the principal insects of which I have given an account, in the memoir just alluded to. They are,

* *Systema Naturæ. Tom. i. Pars ii. p. 889.*

1. A species of *Cimex*, which proves very destructive to the wheat, the Indian-corn, and other important vegetables, in Virginia, and other parts of the United-States.
2. A species of *Phalæna*, which destroys the Indian-corn, in various stages of its growth. This is called "Bud-Worm," &c.
3. A species of *Phalæna*, which I call *Phalæna migratoria*. The larva of this, known by the name of "Grass-Caterpillar," &c., proves very destructive to different species of *gramina*, or grasses, while in their growing state, not neglecting the Indian-corn.
4. Another species of the same family of insects, which has also destroyed the grasses, and the leaves of the Sugar-maple, &c.
5. Two species of *Bruchus*, viz. the common "Pea-Bug" (*Bruchus Pisi*), which commits such dreadful havoc upon the common Garden-Pea (*Pisum Sativum*), and another species, principally confined to the southern parts of the United-States.
6. The common striped "Potatoe-Fly" (*Lytta vitata* of *Fabricius*), destructive to the Potatoe (*Solanum tuberosum*), and other vegetables, and so beneficially employed as a substitute for the cantharides of the shops.

7. Different species of Phalænæ, the larvæ of which destroy the leaves, &c., of the common apple tree, the Crab-apple (*Pyrus coronaria*), the Wild-cherry tree (*Prunus Virginiana*), &c.
8. Different species of Curculio, or Weavel, particularly those which destroy the young fruit of the peach, the plumb, the apricot, the nectarin, &c.
9. The Zygaena Persicæ, and other insects, which prove destructive to the roots, and branches of the peach-tree.
10. The Periodical Locust (*Cicada septendecim*), of which some account is given in the First Part of this *Journal**. In the *memoir*, however, the author has confined himself principally to an account of the injuries inflicted by this insect, and the means of preventing these injuries.
11. The Crioceris Cucumeris, or Cucumber-Fly, which commits such depredations upon the vines of the cucumber, the melon, squash, and other plants of the natural order *Cucurbitaceæ*, as well as upon other plants, not of this family.
12. A species of Cimex, or Bug (perhaps the *Cimex hæmorrhous* of Linnæus), which also ravages the cucurbitaceous vines, particularly the large ones, such as the squash and pumpkin.

* Section First. Articles XV and XVI.

13. A species of *Coccinella*, or May-bug, still more destructive, than either of the two preceding insects, to the *cucurbitaceæ*, not contenting itself with the vines and leaves, but also destroying the fruits, in different stages of their growth.
14. *Melolontha multivora*, commonly called "Rose-Bug," on account of its ravages upon the petals, &c., of the garden rose. But this insect proves extremely destructive to many other vegetables, *some* of which are of much more consequence to us than the rose: such are the apple, the peach, the cherry, different kinds of mulberry, and many others; for, perhaps, no insect is more strictly entitled to the appellation of *multivora*, or multivorous.
15. Various species of insects which inhabit and devour the leaves, &c., of the Common Tobacco, and other plants of the natural order, called *Luridæ*, or *Solanaceæ*. In this section, the author's principal attention is turned to the common "Tobacco-worm," as it is generally called.
16. Different species of *Gryllus*, or Grasshopper, which, in the southern states, devour the young Indigo (*Indigofera tinctoria*), and in Pennsylvania, New-Jersey, &c., devour the leaves and stems of the Potatoe, to the great injury of the crops.



The author of the memoir, presented to the Philosophical Society, is anxious to render that memoir as

perfect as he can : he will, therefore, thankfully receive any facts or observations, relative to any of the insects mentioned, or alluded to, in the preceding list. As it is his wish to render the paper of *practical* utility, he solicits, in an especial manner, the communication of such facts, experiments, or observations, as may tend to throw any light upon the best means of *preventing*, or of *curing*, the evils inflicted by these insects. Much important information of this kind is in the possession of the intelligent farmers, gardeners, and other persons, in various parts of the United-States. It is important, that it should be communicated to the public.

Whatever, relative to these subjects, may be communicated to the Editor of this *Journal*, will be interwoven with the memoir, already alluded to, which will be published by the American Philosophical Society, either as a part of one of the volumes of their *Transactions*, or in a detached form.

EDITOR.

February 22d, 1805.

XXI. *Conjectures relative to the Scite of Bristol, in Pennsylvania. Communicated to the EDITOR, by Mr. WILLIAM BARTRAM.*

IN perusing the First Part of your *Medical and Physical Journal*, I particularly noticed, in Dr. Gregg's *Topographical and Medical Sketch of Bristol,*

in Pennsylvania, his conjecture, that the ground on which “the town stands has been *made ground**.”

I suppose it was a peninsula of New-Jersey; and that the low ground back of, and N. W. of the borough, which he describes as being, at present, low marsh, meadows, and ponds, was formerly the bed or channel of the River Delaware; and that, at that time, the present bed of the river was a low isthmus, which connected it with the firm land of the Jerseys.

I will now give you the reasons which confirm me in the truth of this supposition.

First. Dr. Gregg observed, at the depth of about twenty-five feet below the surface, logs and limbs of trees, which he thought were those of Pine.

Secondly. When I was at Bristol, thirty or forty years ago, I observed the soil to be exactly the same with that of the Jersey-shore, opposite; and that both places produced the same vegetables. In particular, I observed growing in the wood-lands, close to the town, the *Lupinus perennis*, or Perennial Lupin†.

* Section First. Page 20.

† The *Lupinus perennis* is a pretty common plant, in many parts of Pennsylvania. I have observed it growing in a sandy soil, at a little distance from the Delaware, in the neighbourhood of Frankford, about sixteen miles below Bristol. EDITOR.

Thirdly. Dr. Gregg observes, that the “ tide regularly ebbs and flows” over great part of the morass, which insulates the borough; and that up the pond even to the Delaware, the ground is gravelly and dry, just as the bed of the river is now. The channels of rivers are continually changing place, in some part or other, owing to obstructions in their course, inundations, &c.

When the disruption to which I allude took place; whether prior to the arrival of the white people, or since that period, is a matter worthy of investigation.

That the land upon which the town of Bristol is situated was ever a peninsula of the state of Jersey, is, so far as I know, an opinion first suggested by Mr. Bartram. Whether this was ever the case, will, it is probable, be doubted by many; but I think it certain, that a considerable strip of land, upon both sides of the Delaware, both above and below Bristol, is “made ground.” A large part of the ground, which now supports the city of Philadelphia, does, unquestionably, fall under this description. But this subject will be particularly attended to, in another place, by

THE EDITOR.

XXII. *Meteorological Observations, made at Gnadenbutten, on the River Muskingum, at the distance of about one hundred miles to the west of Pittsburg (in Pennsylvania): begun May 20th, 1800. Communicated to the EDITOR, by Mr. JOHN HECKEWELDER, formerly of Bethlehem, in Pennsylvania*.*

May				
20	49	68	54	
21	43	54	54	
22	49	59	56	Cloudy all day.
23	54	65	67	Cloudy and rain, at intervals, all day.
24	61	64	66	Cloudy, with rain, all day.
25	64	72	78	Rain, with sunshine, at intervals. Sultry evening.
26	67	69	65	Rain, with sunshine, at intervals. Cloudy, sultry evening.
27	57	66	66	Foggy all day.
28	58	66	65	Foggy all day.
29	58	67	65	Cloudy, with some drops of rain during the day.
30	65	73	70	Cloudy with thunder, and sunshine at intervals.
31	66	77	68	Changes from sunshine to cloudy, and <i>vice versa</i> . High fresh; the river, overflowing its banks, lays the greater part of the bottoms under water.
June				
1	66	71	70	Sultry all day.
2	64	68	67	Rain all day.

* The thermometer with which I made these observations was kept in the house, on the north side of a window; and the observations were at, or soon after, sunrise; in the afternoon, when the mercury is highest; and at sun-set.

June, 1800.

3 64	72	69	Clear morning; then sultry, with successive gusts, until evening, and in the night.
4 55	64	59	Clear and windy all day.
5 48	60	62	Clear till towards evening; then sultry.
6 49	70	68	Clear all day.
7 65	76	70	Clear all day.
8 55	72	69	Clear all day.
9 55	72	75	Clear all day: very dry weather.
10 61	75	74	Clear and dry.
11 65	74	73	Clear and dry.
12 67	81	77	Clear, dry, and hot.
13 66	84	80	Hot and very dry. Thunder in the north, and north-west.
14 70	88	83	Clear, hot, dry. Thunder in the north-west.
15 74	75	72	Cloudy, with rain at intervals.
16 64	73	71	Cloudy morning. Noon clear. Some wind.
17 60	67	66	Cloudy forenoon. Clear afternoon. Thunder at a distance.
18 60	72	69	Cloudy, windy morning. Afternoon warm and sultry.
19 53	72	68	Clear all day.
20 55	71	73	Foggy morning. Warm day. Sultry evening.
21 66	75	70	Clear morning. Very warm day. Gust at evening.
22 64	71	69	Foggy morning. Cloudy afternoon, with some rain.
23 61	76	75	Cloudy morning. Warm day. Sultry evening.
24 63	78	76	Foggy morning. Clear and warm day.
25 65	76	73	Cloudy morning. Noon, thunder in the west. Sultry evening.
26 67	83	77	Very foggy morning. Hot day. Terrible thunder in the north, and in the south. After sunset, dreadful thunder-gusts seem to meet together here, and dis-

June, 1800.

				charge vast quantities of hail; the atmosphere appearing as all in a blaze, by the lightning.	
27	67	80	78	Successive gusts, with hail from morning till evening, and during the whole night.	
28	70	84	80	Warm, sultry morning. Hot at noon. Successive gusts in the afternoon.	
29	65	76	65	Clear morning. Very fine day.	
30	53	71	68	Clear morning. Fine day, with a gentle breeze.	
July	1	57	72	69	Very foggy morning. Fine day. Sultry evening.
	2	57	72	69	Very foggy morning. Warm and clear day.
	3	59	77	73	Foggy morning. Clear and warm day.
	4	61	78	73	Foggy morning. Clear and warm day.
	5	63	78	73	Foggy morning. Clear and warm day.
	6	67	87	78	Foggy morning. Clear and very warm day.
	7	71	86	79	Foggy morning. Clear and very warm day.
	8	72	87	80	Foggy morning. Warm day. Thunders in the north and east.
	9	75	83	78	Dreadful thunder-gusts, with some hail, from three o'clock in the morning to three in the afternoon. Thunders at night in the east.
	10	71	85	82	Clear morning. Warm day. Sultry evening, with gusts passing by in the northwest and north. Heavy gust at ten o'clock at night.
	11	72	75	71	Successive gusts, with much rain, from four in the morning till after night.
	12	69	78	74	Cloudy morning. Warm afternoon. Clear evening.
	13	66	81	73	Foggy morning. Clear and warm day.
	14	67	80	72	Clear morning, and fine day.
	15	68	77	73	Foggy morning. Fine day. Sultry evening.

July, 1800.

- 16 68 79 73 Foggy morning. Fine day, with a gentle breeze.
 17 64 77 71 Foggy morning. Fine day.
 18 65 78 75 Foggy morning. Warm afternoon.
 19 67 79 81 Sultry morning. Very warm day.
 20 71 92 75 Clear morning. Hot day. Gusts in the north-west. Windy evening.
 21 63 80 69 Cool and cloudy morning. Clear day, with a fine breeze.
 22 66 86 75 Sultry morning and day, with frequent drops of rain.
 23 68 92 70 Very foggy morning. Hot day, with a breeze.
 24 65 96 82 Clear morning. Hot day. Thunders in the north-west.
 25 70 97 77 Clear morning. Hot day. Gusts in west, north-west, and in the south.
 26 73 91 79 Very foggy morning. Warm day. Thunder in the north-west.
 27 64 92 75 Clear morning and day. Warm.
 28 67 93 75 Foggy morning. Warm, clear day.
 29 65 95 75 Foggy morning. Clear and hot day.
 30 65 96 80 Foggy morning. Clear and very hot day.
 31 65 97 80 Foggy morning. Clear and very hot day. At evening thunders, at a distance, in the north-west.

August

Note. Colonel Meigs, of Marietta, informs me, that at Marietta, mouth of Muskingum, the two thermometers he attends to, were, generally, for the last two weeks of this month, up between 97 and 103.

- 1 69 90 79 Sultry morning; likely for rain. Afternoon, gusts all round, but few drops of rain here.
 2 68 85 71 Cloudy morning and forenoon. Afternoon clear.

August, 1800.

- 3 68 91 78 Foggy morning. Clear at noon. Gusts in the north-west.
- 4 66 82 70 Foggy morning. Dry and windy day.
- 5 51 83 62 Cool, foggy morning. Clear and warm day.
- 6 56 85 65 Thin fog. Clear day.
- 7 53 89 80 Thin fog, in the morning. Clear and warm day. Sultry evening.
- 8 62 97 84 Cloudy morning. Hot. Continual roaring of thunders, at a distance, in the north-west and north, from two o'clock in the afternoon, to six at evening; then from the north-west, a very high wind; black clouds; succeeded by sharp claps of thunder, and great fall of rain.
- 9 69 85 75 Cloudy, sultry morning. Warm and clear at mid-day. Gusts pass in the north-west all the afternoon. Cloudy evening.
- 10 60 78 66 Clear morning and day.
- 11 55 84 67 Very Foggy morning. Clear day.
- 12 52 81 73 Very foggy morning. Clear day. Evening gusts in the north-west and north.
- 13 60 80 64 Foggy morning. Clear afternoon. Cloudy evening.
- 14 57 67 65 Cloudy morning. Rains from nine o'clock in the morning until night.
- 15 61 68 65 Cloudy morning and forenoon. Rainy afternoon.
- 16 54 82 73 Cloudy morning. Very sultry afternoon, with a few gentle showers of rain.
- 17 69 85 76 Cloudy morning, thunders, at a distance, in the north. Clear and warm day. Sultry evening.
- 18 54 89 77 Foggy morning. Clear and warm day.
- 19 57 85 72 Foggy morning. Cloudy afternoon and evening.
- 20 47 86 72 Cool, clear morning. Warm day.
- 21 65 89 77 Thunders at morning in the south. Warm day. Lightning at evening in the north-west.

August, 1800.

- | | | | | |
|----|----|----|----|---|
| 22 | 71 | 83 | 78 | Cloudy morning, likely for rain. Gusts all round, in the afternoon, yet here but few drops of rain. Thunders, continually, at evening in the west and north-west. |
| 23 | 69 | 88 | 78 | Foggy morning. Heavy shower at ten o'clock in the forenoon. Warm afternoon, with continual thunders in the west and north-west. At seven o'clock in the evening, a terrible gust from the north, succeeded by two others, which last until ten o'clock, with very sharp claps of thunder and heavy rains. |
| 24 | 70 | 81 | 75 | Foggy, sultry morning. At ten o'clock, a heavy gust passes us in the south; another in the afternoon, in west. Cloudy evening. |
| 25 | 62 | 88 | 77 | Thin fog in the morning. Afternoon, gusts pass by us in the south; here but few drops of rain. Warm evening. |
| 26 | 67 | 93 | 78 | Foggy morning. Thunder at noon, at a distance; very warm; no air perceptible. Towards evening, a terrible thunder-gust, from the south-west. |
| 27 | 67 | 87 | 74 | Foggy morning. Warm day. Lightning at evening, in the south. |
| 28 | 68 | 84 | 72 | Foggy morning. Successive gusts, with great fall of rain, in the afternoon. Continues raining all night. |
| 29 | 63 | 80 | 65 | Cloudy morning. Clear afternoon, with a gentle breeze. Cool evening. |
| 30 | 59 | 72 | 69 | Cloudy morning, with thunder. Successive gusts all day. Evening, a number of sharp claps of thunder, and a vast quantity of rain falls; river rises amazingly. |
| 31 | 63 | 80 | 65 | Cloudy morning. Clear day. |

Note. Fever and Agues make their appearance at the close of this month.

September, 1800.

1	58	80	67	Cloudy morning. Clear day; fine breeze. Clear evening.
2	47	69	62	Cloudy morning and day; likely for rain.
3	50	73	66	Cloudy morning and day. Evening, thunder in the north.
4	43	65	55	Foggy morning. Cloudy forenoon. Clear afternoon.
5	39	69	53	Foggy morning. Clear day.
6	41	70	59	Foggy morning. Cloudy, and likely for rain all day.
7	52	75	64	Cloudy morning. Clear and warm day.
8	47	78	68	Cloudy morning. Clear day.
9	62	84	73	Rainy morning. Warm day; somewhat cloudy.
10	55	85	72	Foggy morning. Clear and warm day.
11	55	86	73	Foggy morning. Clear and warm day.
12	55	86	74	Foggy morning. Clear at mid-day. Cloudy afternoon.
13	62	85	76	Rainy morning, and showers through the day, with sunshine, at intervals. Sultry evening. Gusts in the night.
14	67	76	65	Cloudy morning. Cool day and evening.
15	38	70	60	Cool, foggy morning. Clear and warm day.
16	43	76	60	Foggy morning. Clear and warm day.
17	41	79	63	Foggy morning. Clear and warm day.
18	44	85	66	Foggy morning. Clear and warm day.
19	53	84	71	Cloudy morning. Clear and warm day. Cloudy evening.
20	65	70	69	Rain in morning, and through the day. Evening, thick fog.
21	65	75	65	Foggy morning. Cloudy all day, and evening.
22	65	72	67	Cloudy from morning until night.
23	53	80	71	Cloudy morning. Sultry day, with thunder in the north and north-west; gentle showers. After sun-set, heavy gust.
24	65	80	75	Rainy morning. Sultry, cloudy day. Clear evening.
25	66	80	71	Showery morning and day, until night.

September, 1800.

26	53	70	57	Cloudy morning and day, with few intervals of sunshine. Clear at evening.
27	45	72	60	Foggy morning. Cloudy day and evening.
28	50	66	60	Foggy morning. Cloudy day and evening.
29	50	67	60	Foggy morning. Clear day.
30	43	70	56	Clear morning and day.

October

1	34	68	58	Foggy morning. Clear day.
2	46	67	55	Clear morning and day.
3	35	64	48	Thin fog in the morning. Clear day. Cool evening.
4	30	66	55	<i>Frost:</i> Clear until evening, then likely for rain.
5	45	53	53	Rains hard from morning until night. Dark night.
6	36	40	39	Dark and cloudy, from morning till night, with a very high west wind; river rises rapidly.
7	31	54	44	Cloudy morning. Clear, fine day.
8	23	62	52	<i>Hard frost.</i> Clear, fine day.
9	45	65	65	Cloudy morning; high south wind; thunders in the west; rains here by ten o'clock; remains cloudy and sultry until night.
10	48	54	49	Dark and cloudy, from morning until night; likely for rain.
11	37	58	54	Foggy morning. Clear day. Cloudy evening; rain after night.
12	54	60	59	Rain from morning until night, and during the night.
13	51	59	49	Foggy morning. Clear day.
14	28	62	41	<i>Frost.</i> Clear day.
15	32	66	61	Light frost. Cloudy forenoon. Rainy afternoon and night.
16	49	68	65	Foggy morning. Cloudy day, with rain, at intervals.

October, 1800.

17	46	77	69	Clear morning. Warm day. Lightens, at evening, in the south-west and north-west.
18	54	50	47	Cloudy morning. Rainy afternoon.
19	36	51	46	Cloudy morning, with some showers in the forenoon. Afternoon, clear and windy.
20	27	69	62	<i>Frost</i> : clear and fine day.



Meteorological table of the first week in September, taken on Thames-River, north side of Lake-Erie, by C. F. Dencke, and kindly communicated to me.

September, 1800.

1	70	78	68	Cloudy day.
2	64	65	63	Windy, with showers.
3	57	66	57	Foggy morning.
4	42	57	50	Clear morning.
5	41	70	51	Foggy morning.
6	61	80	65	Clear morning. Noon warm.
7	57	80	60	Clear morning. Warm day.

N. B. I am informed, that this week has been unusually cool, more so than the inhabitants have heretofore experienced in the first week of September.

C. F. Dencke.

As a proper supplement to the preceding observations, the Editor begs leave to give, in this place, the following extract of a letter* from the same ingenious and respectable correspondent, to whom he is indebted for many important facts and observations, relative to the Indian inhabitants, the animals, vegetables, &c., of North-America.

" We have had remarkably cold weather, for the last five or six weeks. The mercury was frequently down to 0, and even as low as 15 degrees *below* 0. This was the case on the 19th of December, 1804, and also on the 21st of the present month (January).

" On the 20th of December, it was 8 degrees below 0.

" January 1st, it was 2 degrees above 0.

" January 2d, 8 degrees above 0.

" January 11th, at 0.

" On the 14th of this month, a warm thaw fell in, and immediately the little Blue-birds (*Motacilla Sialis*) were seen flying about my garden, and even visiting their boxes, in which, in the spring season, they hatch their young; but severe weather having since returned, they are once more gone (somewhere).

* Dated Gnadenhutten, January 22d, 1805.

The Turtle-Dove (*Columba Carolinensis*) is never, I have reason to believe, far off; for I have seen them, frequently, in a mild winter, in every month.

“ January 22d. The mercury was at 7 degrees above 0, this morning.”

XXIII. *Description of the Obstetrical Forceps of JOHAN DANIEL HERHOLDT, M. D., Professor of Surgery in the University of Copenbagen, in Denmark. Drawn up, and communicated to the EDITOR, by FREDERICK DETLEF MEYER, M. D.*

THE advantages which the Smellian Forceps presents to the operator, consist, principally, in the two following circumstances :

First : in the facility with which the two branches of the instrument are joined at the lock, and

Secondly : in the form and structure of its handle.

The forceps of Mr. Levret is furnished with larger spoons, which are better adapted to the incurvature of the *canalis genitalis*: but the lock and handle of the French practitioner's instrument render the operation, by means of it, more difficult and fatiguing to the accoucheur.

Fried* invented a forceps, which may be said to be compounded of the two just mentioned. Its spoons are formed after the model of those of Levret; while the lock and handle are similar to those of Smellie's forceps.

This instrument seemed, now, to have attained its highest degree of perfection: but the improvements made upon it by the active and experienced Herholdt† are still of great practical value.

The annexed plate (see Plate II) exhibits a correct representation of the HERHOLDTIAN Forceps.

* George Albrecht Fried was a celebrated German obstetrical practitioner, who seems to have inherited, from his father, a genius for his profession. His *Anfangsgründe der Geburtshilfe*, published at Strasburg, in 1769, is said to be a work of merit. In this work, he gives it as his opinion, that vitiated or difficult labours are frequently owing to the oblique position of the uterus. He was much attached to instrumental delivery, being of opinion, that it is necessary to have recourse to the use of the forceps, in every case in which the diameter of the foetal head is greater than the diameter of the pelvis. EDITOR.

† Dr. Herholdt is still (or lately was) living, and enjoys, among his countrymen, a large share of reputation, both as a practical and philosophical physician. He is the author of a number of works or essays, of considerable merit, one of which is well known to me: viz. his *Commentatio de Vita in primis foetus Humani ejusque Morte sub Partu*. Havniae: 1802. This is, truly, a classical work of its kind, discovering abundant proofs of a genius well fitted for original observation, and of that extensive reading, without which great improvements are rarely made, in any of the branches of medical science. EDITOR.

Its spoons are nearly similar to those of Levret's forceps: its lock and handle are of the size and form of those of the Smellian forceps.

On the outside of each of the branches, near to the lock, are two small hooks, marked, in the plate, A. B. These hooks are fitted to receive the fore and middle finger of the operator. By this contrivance, he is enabled to draw much stronger, more steadily, and with less inconvenience to himself; not being subjected to that pain and fatigue of the finger, which are unavoidable, when he is obliged to draw with one finger put above the lock, between the two branches of the instrument: for in this latter *encheiresis* he very often moves the branches out of their lock, and thus occasions a slipping of the instrument.

These great and serious inconveniences, which so frequently occur in the extraction of the foetus by the forceps, have been entirely obviated by Mr. Herholdt's instrument. I am even of opinion, that we are now enabled to accomplish the delivery by the forceps, in many cases, which, before the addition of the two hooks (A. B.), rendered it necessary for the operator to have recourse to the most horrid of all surgical operations; I mean the *excerebration* of a living foetus.

It is another advantage of this contrivance, that in fixing or applying the two branches upon the head of the foetus, the accoucheur, as well as his assistant, can each of them keep the branch committed to their

individual care, more secure and steady, by holding the hook with one finger.

On the outside of the handle of the left branch, there is a groove, in which there is a small iron plate, or bar (C. D.), which is four inches long, about four lines in breadth, and near two lines thick. This plate is toothed, having ten excisions, and nine teeth. At one of its ends (D.), it is fixed to the lower end of the handle in such a manner, that it can be moved and turned over to the lower end of the right handle, which in a groove (E.) has a small iron pin, adapted to the reception of any of the excisions of the bar.

In my own practice, I have, certainly, found this contrivance of service, in preventing the two branches of the instrument from receding from each other. With a view to obtain this advantage from those forms of forceps which are not furnished with such a bar, some practitioners are accustomed to tie the handles together, by means of a handkerchief.

I have not yet seen any description of Mr. Herholdt's forceps, and am, therefore, uncertain, whether he has had any other views, besides those which I have mentioned, in the improvements with which he has enriched this instrument.

Philadelphia, February 24th,
1805.

XXIV. *Notices of the Sulphur, Sweet, and other Mineral Springs, in the western parts of Virginia.*
From the MS. Journal of the Reverend Dr. ASH-BEL GREEN, of Philadelphia. 1800.*

I. THE SULPHUR SPRINGS.

THESE are distant from the Hot-Springs about thirty-two miles, and the road is extremely bad between them. They are situated in Green-Briar-County, on the west side of the Alleghaney.

These waters have a very strong impregnation of sulphur, so that fleaks of it are easily gathered up from the sides of the rills that run from the Spring. The water is extremely cold, being 63 degrees of Fahrenheit's thermometer.

No other quality than sulphur is perceptible in this water, though it is probable that some other must exist, as it is not possible, by art, to give to common water the power of holding in solution as much sulphur as this evidently contains.

It is, I think, probable, that the original source of this Spring is limestone, and that the water is first impregnated by this, and thus qualified for taking up a larger portion of sulphur afterwards, in its passage over this mineral : as it is known that lime will ena-

* See Part First. Section First. Article VII.

ble common water to hold this body in solution, to a much greater degree than it will do in a pure state.

Perhaps, this idea is corroborated by the colour of the sulphur gathered from the sides of the Spring, which, though it burns and smells, in all respects, like brimstone, yet is of a whiter appearance. This whiteness may possibly be occasioned by a small mixture of lime.

The Spring, from which the sulphur-water proceeds, issues from the ground into a marsh, and is not very abundant. It requires a number of hours to fill the bath.

These waters are more purgative than any in Virginia. They are extremely useful in all bilious habits, and in a variety of cutaneous eruptions. They are taken into the stomach in very large quantities, and produce a very strong appetite. They so effectually penetrate the system, that a person who uses them freely, in drinking and bathing, smells strongly of sulphur, and communicates it even to his clothes, so as to be perceptible for a considerable time after leaving the Springs ; and turns silver watches black, when carried in the pocket.

The accommodations at these Springs are said to be pretty good. I have never seen them ; but having conversed at the Sweet-Springs (from which they are distant only sixteen miles) with people who come from them daily, and have seen the sulphur which the

water deposits, I can rely upon the above account as accurate.

II. RED-SPRING.

This rises in Bottatourt-County, within a mile of the Sweet-Springs. It is a pretty strong chalybeate, with a considerable portion of fixed air mingled with the water. It is a copious spring, issuing from the side of a rocky bank. Its temperature is 73 degrees of Fahrenheit.

The water of this Spring is, probably, as highly medicinal as any in Virginia. It was purchased, a few years since, by Colonel Gurney, of Philadelphia, who was making excellent arrangements for the accommodation of company, when he died, and the whole business has, ever since, been at a stand. He, however, proceeded so far as to erect a number of baths, with a bath-house, together with a large frame dwelling-house, for the lodging and boarding of those who should use the Spring. This dwelling-house was unfinished; but it serves still for a lodging-place to a number of people, who come to the waters.

III. THE SPRING AT THE MILL.

At a short distance from the Red-Spring, on the road to the Sweet-Springs, there is a mill, by the side of which there is a mineral water, which, in

taste, exactly resembles the water of the Sweet-Springs, except that it is stronger.

It issues from the side of a broken rock; and a spring of common water comes out so near it, that, to appearance, they seem like the same fountain. This Spring, having nothing peculiar in its qualities, and not being easy of access, is but little used.

IV. SWEET-SPRINGS.

These rise in Bottatourt-County, in Virginia. They are four hundred miles distant from Philadelphia, in nearly a south-west direction. The road to them is by the Warm and Hot-Springs, and, from Staunton, is almost impassable for a carriage.

These Springs are usually considered as more medicinal than any other in Virginia, especially for drinking. They are surrounded, on all sides, by mountains, and are found in a hollow, which connects with a small valley of bottom land, running in an irregular manner between the mountains. At and about the Springs, there is, indeed, a sort of opening, or circular space of intervale land, which is not of the bottom kind; but in all directions the mountains, at less than three miles distance, intercept the view.

These Springs are very copious, so that a saw-mill is turned by them, at the distance of two hundred yards from their source. The water rises perpendi-

cularly out of the earth, forming an immense number of bubbles in its ascent.

There is a house, with two apartments, erected over the Spring, for the purpose of bathing, which is done by plunging into the water, that rises to the height of about three feet, at the bottom of the steps which lead from the apartments to it. The water which is used for drinking is taken out of a tub, made of a hollow tree, and sunk two or three feet into the earth, at the bottom of the Spring, at the distance of six or eight feet from the building.

These waters, when taken into the stomach, are sometimes emetic, especially when first used. Generally, however, they are not emetic. Their common operation is to prove gently purgative, and powerfully diuretic. They have an acidulous taste, somewhat resembling the taste of weak Cream of Tartar punch. Their temperature is 72 degrees of Fahrenheit's thermometer.

The following observations on these waters were given me by Bishop Madison, of Virginia; the result of experiments made by himself, and some of them seen by me.

The specific gravity is the same with the mountain water, of the same temperature. This was determined by a hydrometer, and also by weighing a guinea in each.

The waters abound with an air. This air is the carbonic acid, and gives an acidulous taste to the water. It may be easily collected, as it rises from the bottom of the Spring. When mixed with lime-water, it instantly renders such water milky, and precipitates the lime. The Sweet-Spring water itself, when mixed with lime-water, produces the same effect. The air is destructive to animal life, extinguishes flame, and is somewhat heavier than atmospheric air.

It appears, from an experiment made in the manner of Kirwan and Fourcroy, that an ounce of water contains a cubic inch and a half of air.

The precipitate formed by lime-water is insoluble in common water.

The water of the Spring, however long boiled, is still rendered instantly milky, by lime-water.

The different acids—nitrous, sulphurous, and muriatic—have no other effect upon this water, than the sudden extrication of a small portion of air; particularly the sulphurous.

Any of the acids poured on the water rendered turbid by lime-water, instantly causes it to be perfectly transparent.

Castile soap renders the water milky and curdly. A thick scum is soon formed.

The infusion of galls appears to have no effect upon the water.

Charcoal, gently agitated in the water, takes from it entirely its peculiar or acidulous taste. A similar effect may be produced, by long pouring from one vessel into another, but not in the same degree.

Volatile alkali renders the water milky, and forms a white precipitate.

Salt of Tartar instantly renders the water milky, curdly, and causes a white precipitate, which is insipid, but effervesces with the acids.

The sediment which takes place, on boiling the water, was mixed with rain water, often shaken together, then permitted to settle, and to remain for two hours. It was then filtered. The quantity of sediment first mixed with the water was re-obtained. It seemed to have sustained no loss.

A solution of silver in nitrous acid, poured into the water, strikes a deep purple-colour, and causes, in small quantity, a brownish precipitate, which, when rubbed on paper, and set on fire, gives a bluish flame, but no smell of sulphur.

The vitriolic acid, poured on the mixture of the solution and water, produced no effect; but on adding the muriatic, a white cloud was formed; the whole became milky; a white precipitate ensued,

with a little of the brown ; and the mixture re-assumed, in great part, the purple colour : but on standing eighteen hours, it became transparent.

It would appear, from these observations of Bishop Madison, that the principal ingredients which this water possesses, are fixed air, or carbonic acid, and calcareous earth. The experiment made with the galls demonstrates, that there is no iron in the water. For a time, I suspected the existence of a small portion of sulphur ; but by no experiment that we could make did this idea appear to be just. The circumstance that the water loses its acidulous taste, by passing it from one glass to another, would seem to indicate, that this taste is owing to some quality that is very volatile. And yet, as common water is acidulated by the air collected from the Spring, it is manifest that the taste is derived from it. Perhaps, the air itself may be a compound, and that one of its constituent parts may be the volatile, and the other not. This seems to be indicated by the two facts, that even boiling the water does not deprive it of the fixed air ; and that pouring it from one glass to another deprives it of its taste.

The water of these Springs is seldom agreeable, when first used, and almost as seldom fail to become highly so, when used for some time. Commonly, the attachment to it becomes so great, that it is left with reluctance, and longed for afterwards. There are some, however, who never become fully reconciled to

it, and I think that to such persons it is seldom, if ever, useful.

The water is considered as salutary, in all cases of debility; in rheumatism of the chronic kind; in gout; in bilious and febrile habits; in an incipient consumption, where ulcers or tubercles are not yet formed in the lungs; and in all complaints of the kidneys, bladder, and urinary passages.

Many, however, who visit these Springs, receive no benefit from them. In consumptive cases, where the lungs are already affected with ulceration, they are sure to aggravate the disease. The truth seems to be, that they are a good deal stimulant, and very powerfully tonic, and when the system cannot bear a remedy of this kind, they are injurious.

In sores of various kinds they are salutary, and are said to be an effectual remedy against the bite of a rattlesnake, when inflicted on beasts.

On the whole, it is certain, that these waters have, in a great number of cases, effected wonderful cures; that, in a considerable number, they have been of no use; and that, in some, they have been injurious.

The accommodations at the Sweet-Springs are tolerable; and, with a little further expence and care of the proprietor, might be made very good. The greater number of those who come here are obliged to live in log huts, plastered with mud, and the floors

loosely laid ; without glass in the windows. While the weather is warm, no great inconvenience results from this ; but, when the evenings and mornings become cool, the huts are uncomfortable ; and, indeed, the article of lodging, at all times, is less comfortable than any other.

The price of board, in 1800, was six dollars a week, for a gentleman or lady, and half that sum for a servant.

V. BUTTERMILK-SPRING.

At about three hundred yards from the Sweet-Spring, in a meadow adjoining, there is a small spring, which, from some circumstance, unknown to me, is denominated the Buttermilk-Spring.

The qualities of this water seem to be much like those of the Sweet-Spring, except that they are said to be more emetic and purgative. This Spring is not cleared out, and is scarcely ever used. It belongs to the proprietor of the Sweet-Spring.

VI. THE NEW SULPHUR-SPRING.

About three years since, there was discovered a new Sulphur-Spring, at the distance of about two miles from the Red-Spring.

I visited it a number of times, and drank freely of the water, which tastes strongly of sulphur. A piece of silver, thrown into it, becomes black, in a few minutes. It deposits a considerable quantity of sulphur, on the leaves and earth over which the water runs from the Spring, some of which I collected, and found it perfectly inflammable, and possessing the smell of brimstone in perfection.

It is probable, that this Spring, with a little attention, would answer all the purposes for which sulphur-water is used. Those, however, who have visited the other Sulphur-Spring, say, that it is considerably stronger than this.

VII. THE RED SULPHUR-SPRING.

This rises in Monroe-County, at the distance of forty miles from the Sweet-Spring. It receives its name from the circumstance of the appearance of the sediment which the water deposits, and which is nearly of the colour of poke-berries.

The taste of the water indicates sulphur, but not in so great a quantity as the Sulphur-Spring, No. I. This Spring, however (which has not been long discovered), is growing into great repute, both in pulmonary complaints, and in eruptions of various kinds. It is difficult to say what produces the red sediment in the water of this spring. It has no taste but that of sulphur.

The accommodations here are not very good, but the people are represented as very kind and attentive. I have not been at this place.

XXV. *Continuation of the Experiments on the Gymnotus Electricus. See Article XV**.

August 19. Experiment 12. WE took a piece of dry charcoal, above four inches in length, which had before been found to conduct electricity very well. Mr. Kinnersly held the one end of the coal, and put a finger of the other hand in the water ; another person held the opposite end of the coal, and touched the fish near the tail, at the same time that its head was near Mr. Kinnersly's finger. Each person felt a small shock through both arms. This experiment succeeded equally a second time.

Experiment 13. We endeavoured to obtain a visible spark from the fish, in this manner : a circuit being formed by two persons, one of them held his hand in the water, and with the other touched the fish, each person holding, at the same time, in the

* It was originally the Editor's intention (see page 100), to have deferred this part of the paper to "a future number of the Journal :" but it is now thought more proper to publish it in this Section of the present number. The "additional observations," promised by the Editor, will contain a historical view of the progress of discovery relative to this and other species of fishes, capable of exerting the same wonderful influence, whether that influence be the ELECTRICAL or GALVANIC.

other hand, a brass chain, fastened to a thick piece of wire; the ends of the two pieces of wire being rounded off, were made to approach within less than the hundredth part of an inch, but without touching, and secured at that distance. This experiment did not succeed now, though we attended to it, with great patience. But though we had not the pleasure of seeing a spark between the two wires, we had the satisfaction of knowing that none ought to have been seen, because no shock passed through the wires ; for the persons who held them always declared, they felt the shock in that hand only which touched the fish or water.

Experiment 14. Instead of the wires, placed at a small distance from each other, in the last experiment, we made about a quarter of an inch of a line of gilding on a book serve for part of the circuit ; but could not make a shock pass through it, and, consequently, saw no appearance of electricity.

Several other experiments were often repeated, and always with the same success ; amongst which were the following.

If a single person takes hold of the fish, with both hands, placing one near either extremity, he receives a shock through both arms, and sometimes feels it across the breast likewise. If he touch it with one hand only, he never feels it further than in that hand and arm ; generally in the hand only.

If several persons join hands, and only one of them touch the fish, none of the others touching the water, the shock is never felt by any but the person who touches the fish, and by him in that hand and arm only.

No shock from the fish can be communicated through dry wood, glass, or any other substance, so far as we have tried, that will not conduct electricity*.

XXVI. *Indian Account of a remarkably strong and ferocious Beast, which (they say) existed in the northern parts of the State of New-York, about two hundred years ago. Collected, and communicated to the EDITOR, by Mr. JOHN HECKEWELDER.*

THE Jagishot (or naked animal, or Bear, as some of the Indians call it) was an animal much superior in size, to the largest bear. It was remarka-

* November 22d, 1794. Mr. Rittenhouse, in a conversation I had with him, on the subject, seemed very confident, that, in making the preceding experiments upon the Gymnotus, he, upon one occasion, saw the ELECTRIC spark. Another gentleman, who was present at, and assisted in, the same experiments, informed me, that the gymnotus killed three Cat-fish (*Silurus*), at a single stroke; at least, the fish were instantly stunned, and thrown upon their backs; so that the Eel accomplished his purpose: for he immediately proceeded to eat the fish, upon which his influence had been so powerfully exerted. The species of *Silurus* are destroyed with more difficulty, by the *gymnotic* influence, than many other species of fish. EDITOR.

† The Indian name of this beast, or animal.

bly long-bodied, broad down its shoulders, but thin, or narrow, at its hind legs, or just at the termination of the body. It had a large head, and frightful look. Its legs were short and thick. Its paws (the toes of which were furnished with long nails, or claws, nearly as long as an Indian's finger) spread very wide. Except the head, the neck, and the hinder part of its legs, in all which places the hair was very long, the Jagisho was almost naked of hair, on which account the Indians gave it the name of " Naked."

Several of these animals had, before this time, been destroyed by the Indians, but this particular one had, from time to time, destroyed many of the Indians, particularly women and children, when they were out in the woods, getting nuts, digging roots, &c., or when they were working in the fields. Hunters, when fast pursued by this animal, had no means of escaping from it, except where a river or lake was at hand. By plunging into the waters, and swimming *out*, or *down* the stream, to a great distance, they effected their escape. When this was the case, and the beast was not able to pursue his intended prey any further, he would set up such a roaring noise, that every Indian who heard it trembled, with fear.

This animal preyed upon every beast it could lay hold of. It would catch and kill the largest bear, and devour it. While the bears were plentiful, the Indians had not so much cause to dread the Jagisho: but when this was not the case, he would run about in the woods, searching for the track, or scent, of the

hunters, and follow them up. The women became so much afraid of going out to work, that the men assembled to deliberate on a plan for killing him.

This beast had its residence at, or near, a lake, from which the water flows in two different ways (or has two different outlets), one northerly, and the other southerly. The Indians being well informed of this circumstance, a resolute party of them, well armed, with bows, arrows, and spears, made towards the lake. They stationed themselves on a high, perpendicular rock, climbing up the same by means of Indian ladders, and then drawing these ladders up after them.

After being well fixed, and having taken up with them a number of stones, the Indians began to imitate the voices and cries of the various beasts of the woods, and even those of children, in order to decoy the Jagisho thither. Having spent some days in this place, without success, a detached party took an excursion to some distance from the rock. Before they had reached the rock again, the beast had gotten the scent of them, and was in full pursuit of them. They, however, regained that position, before he arrived. When he came to the rock, he was in great anger, sprang against it with his mouth wide open, grinning, and seizing upon it, as though he would tear it to pieces * * * *. During all this time, numbers of arrows and stones were discharged at him, until, at length, he dropped down, and expired.

His head was then cut off, and was carried, in triumph, by the Indians, to their villages, or settlements, on the North-River, and was there fixed upon a pole, that it might be seen. As the report of the death of the animal spread among the neighbouring tribes, numbers of them came to view the head, and to praise the victorious Indians, for their warlike deed.

N. B. The Mahicanni claim the honour of this act.

REMARKS.

The preceding traditional accounts of the Indians, concerning the “Naked Beast,” are, in some respects, so very extravagant, that they may, perhaps, be deemed altogether unworthy of any attention. I must confess, however, that I cannot but consider such traditions, though imperfectly handed down to us, and evidently disfigured by fable, as entitled to the notice of the naturalist, and philosopher.

That such an animal, as the Jagisho is described to have been, has ever existed, in the state of New-York, may, perhaps, admit of a rational doubt: but that the Indian tradition relates to *some remarkable* animal, that is no longer to be seen in the country

which it is said to have inhabited, I think there is good reason to believe. What this animal was; at what period it ceased to be seen; and what was the *more pure* account of the Indians concerning it, one hundred years ago, I do not pretend to determine.

Possibly, the Indian tradition refers to the large animal (I mean an individual of the same species), some of whose bones have been found in a cavern, in the back parts of Virginia; the animal of which mention is made in the First Part of this *Journal**. It is true, indeed, that the Indian accounts of the *activity* of the New-York animal are not very favourable to the idea, that that animal was Mr. Jefferson's Megalonyx, which, I have supposed, belonged to the order *Tadigrada*, comprehending the Sloth, the Armadillo, and others. What is said of the claws of the Jagisho may be thought to favour the notion, that this was really the megalonyx, or megatherium. But I would not be understood to place any dependance upon the minute or descriptive circumstances which are mentioned in the Indian tradition. Nor, indeed, do I think it at all probable, that the megalonyx (as it is called), or any of the species of elephants whose exuviae abound in various parts of North-America, have been seen, in a living state, in this continent, within the period of two, or even twice two, hundred years.

EDITOR.

* Section Third. p. 152—154.

**XXVII. Notice of the Sulphur-Springs, in the County
of Ontario, and State of New-York. In a letter to
the President of the United-States, from the EDITOR.**

DEAR SIR,

IN answer to your letter, which I received this morning, I shall, with great pleasure and strict sincerity, communicate what I know respecting the Sulphur in Jenisseia.

I visited this bed of sulphur, or, as it is called in the country, the “Sulphur-Springs,” in August, 1797. I observed a quantity of sulphur in and about the springs. The whole quantity might, perhaps, have amounted to a cart-load; I think not more. It is, unquestionably, in a state of considerable purity; for some of it, which was examined by Dr. Priestley, was found to contain 96 *per cent.* of good and unmixed sulphur.

The whole of the sulphur that I saw, and the whole of what I could obtain any information at the time, from Captain Williamson, Mr. Thomas Morris, and other gentlemen, was, undoubtedly, derived from the water of the Springs. This water is very transparent; as much so as the clearest limestone-water. It, however, both tastes and smells, very sensibly, of sulphur. To me, it had, likewise, a very evident taste of lime. Indeed, there can be no doubt, that the sulphur is held in solution by means

of the lime. The temperature of the Springs is 54 degrees of Fahrenheit's thermometer.

The sulphur is deposited by the water, in its passage out of the basin; in which it first makes its appearance. It is deposited upon the adjacent stones, leaves, mosses, &c., especially upon the mosses. The stones assume a variety of curious shapes, some of them evidently occasioned by the action of the sulphuric acid (here constantly forming, by the union of pure air with the sulphur) upon them.

I must not omit to observe, that the ground about the springs, at least on one side of them, for some distance, gives a hollow sound under the hoof of the horse. Possibly, at the place from which this sound proceeds, there is a considerable excavation, occasioned by the gradual removal of the sulphur, which is deposited by the spring. This suspicion is rendered more probable from our knowing, that the Jenisseia-country does remarkably abound in sulphur.

The above is the substance of some notes which I made on the spot. Permit me to add, that, judging by what I saw at the time, I cannot believe, that the possession of the "Sulphur-Springs" will be of any importance to the United-States. It is not easy for me to say, what quantity of the sulphur I have mentioned is deposited by the water, in the course of a month, or a year. From the small size of the Springs, however; from the transparency of the water; and from the quantity, say a cart-load, which I saw (and what

I saw may be supposed to have been collecting for a very considerable length of time, as the inhabitants, in 1797, were few in number, and did not carry it away), I greatly doubt, if one quarter of a ton be deposited annually. What the bowels of the earth, in the neighbourhood of the Springs, may contain, we know not: but, with respect to the similar Springs, in Europe, we have many facts to prove, that the matters impregnating the waters, are often derived from a distant source.

Philadelphia, December 30th,

1803.

THE
PHILADELPHIA
MEDICAL AND PHYSICAL JOURNAL.

SECTION SECOND.

VOL. I. PART II.

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BIOGRAPHY.

SEVERAL Sketches, which were intended for the present Part of the Journal, are unavoidably deferred to a subsequent Part.

THE
PHILADELPHIA
MEDICAL AND PHYSICAL JOURNAL.

SECTION THIRD.



REVIEW.

I. *Cautions to young persons concerning Health, in a Public Lecture, delivered at the close of the Medical Course, in the Chapel at Cambridge (Massachusetts), November 20, 1804: containing the General Doctrine of Chronic Diseases; showing the Evil Tendency of the Use of TOBACCO upon Young Persons; more especially the Pernicious Effects of smoking Cigarrs**; with observations on the Use of Ardent and Vinous Spirits in general. By BENJAMIN WATERHOUSE, M. D., Professor of the Theory and Practice of Physic, and Teacher of Natural History, in the University of Cambridge.

—Ut sit mens sana in corpore sano.

Juv.

Printed at the University Press, by W. Hilliard.
1805.

THIS Lecture ought to be carefully perused by those for whom it was written. It contains, indeed, some valuable matter, which may be useful to

* “Cigarr, from the Spanish *Cigarro*, a little roll or tube of tobacco; *Tabaci folia in tubulum convoluta*. A cigarr is a leaf of tobacco, formed into a small twisted roll, somewhat larger than a

the best informed practitioners of the healing art. We take the liberty of selecting, for this part of the *Journal*, the following observations on Tobacco, and other Narcotics. We would not wish, however, to be thought to be implicit believers in the whole of what the learned Professor has said on the subject; as, independently of other circumstances, the late observations of Sir John Sinclair, which Dr. Waterhouse has not, perhaps, seen, would seem to show, that the use of tobacco is not unfavourable to the attainment of a good old age. On this subject, we can speak with impartiality, as we are not attached to the use of the American weed, in any shape, unless as an article of the *Materia Medica*, in which case we agree, with Dr. Fowler and Dr. Waterhouse himself, that the tobacco is entitled to the notice of physicians.

" Among the causes, which act directly and immediately on the stomach, we mentioned, besides ardent and vinous spirits, certain **NARCOTIC** substances.

" **NARCOTICS** are soporiferous drugs, which induce stupefaction. It is the property of narcotics to exhilarate first, and then to relax and stupify. They

pipe-stem, of about six inches long. The smoke is conveyed through the winding folds, which prevent it from expanding; there is, however, a small aperture made through the middle, by a wire. The cigarr preceded the invention of the pipe. The best come from the Havanna; those most esteemed are made in the convents." DR. WATERHOUSE. p. 27.

invariably debilitate the organs, to which they are *immediately* applied; at length they have a similar effect on the whole system. At the head of this class of drugs we place OPIUM, which is the milky juice that exudes from the heads of poppies, when incisions are made in them; and then gradually dried in the sun. To this class belong also *Cicuta* or hemlock, *Belladonna* or deadly nightshade, *Stramonium* or apple of Peru, and *Nicotiana* or *Tobacco*.

“ The Turks, who were forbidden by Mahomet to drink wine, intoxicate themselves with opium. It is said, that some will eat more than an ounce in a day. We have seen, that nothing so effectually preserves health and prevents disease, as maintaining the tone and regular motions of the digestive organs; and there is no drug in common use, which renders them so torpid, and which so effectually stagnates their functions, as opium. After destroying the energy of the stomach, it undermines the powers of all the other organs, in succession, even to the organ of *thought*. Travellers inform us, that the visage and general appearance of the opium-eaters in Turkey are the most disgusting imaginable; even worse than our most abandoned rum-drinkers. Some of these miserable Turks have, however, mind enough left to destroy themselves by the dagger, to prevent living, or rather *breathing*, a few years longer, in a state of confirmed idiotism, which is the fate of most of them, during the latter years of their existence. Thus much for *opium*: but what shall we say of *Nicotiana*, or our beloved *Tobacco*?

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“ The great Linnaeus has, beside his celebrated *artificial* classification, given us a *natural* one. In his *natural* arrangement he has placed *Tobacco* in the class *Luridæ*; which signifies pale, ghastly, livid, dismal, and fatal. To the same ominous class belong Foxglove, Henbane, Deadly-nightshade, and another poisonous plant, bearing the tremendous name of *Atropa*, one of the Furies. Let us examine one of them, viz. *Tobacco*, its qualities, and its effects on the human constitution.

“ When Tobacco is for the first time taken into the mouth, it creates nausea and extreme disgust. If swallowed it excites violent convulsions of the stomach and of the bowels, to eject the poison either upward or downward. If it be not very speedily and entirely ejected, it produces great anxiety, vertigo, faintness, and prostration of all the senses; and in many instances death has followed. The oil of this plant is one of the strongest of vegetable poisons, insomuch that we know of no animal, that can resist its mortal effects. These are, without exaggeration, some of the *lurid* qualities of our beloved tobacco. Let us now see, if it can be agreeable to the laws of the animal economy, or consonant to common sense, that a plant, with such qualities, can act otherwise than detrimental to the tender constitutions of young persons.

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" The organs of the senses are so many guards or centinels placed at those avenues, where death is most likely to enter. For illustration, let us suppose a man cast ashore on some uninhabited island, and roaming among unknown fruits and herbs, with a desire to satisfy his hunger; he knows not whether what he finds be wholesome, or poisonous. What *naturally* follows? The first examination, which the vegetable undergoes, is that of the *eye*; if it incur its displeasure, by looking disagreeable and forbidding, even this may induce him to throw it away; but if it be agreeable to the sense of seeing, it is next submitted to the examination of the *smell*, which, not unfrequently, discovers latent mischief, concealed from the sight; if not displeasing to the sight, nor disagreeable to the smell, he readily submits it to the scrutiny of the next guard, the *tongue*; and if the taste too approve the choice, he no longer hesitates, but eating it, conveys it into his stomach and intestines; both of which, like faithful body-guards, are endowed with a nice perception, and prompt action, by which, if what was eaten as wholesome food should, notwithstanding all the former examinations, still possess a latent quality, injurious to life, the stomach is stimulated to reject it upward, or the intestines to expel it downwards. These internal perceptions, and consequent exertions, are the first and most simple acts of nature, being purely instinctive, constituting what physicians call the "*Vis medicatrix naturæ*," or re-action of the system*.

* " See Mr. Mudge's Essay on the *Vis Vita*.

" Let us suppose, that our hungry adventurer had fallen on the tobacco plant; he would find nothing forbidding in its appearance; to his smell, it would be rather ungrateful; to his taste, so nauseating, that it is surprising, how the same man ever ventured to taste green tobacco twice; but, if taken into his stomach, convulsions, fainting, and a temporary loss of his senses follow; accompanied with violent and nasty operations. If that which is wholesome, affect the senses of animals with pleasure, and invite them to convert it into their own juices; and, if that which is unwholesome, excite disgust in smell, taste, and appetite, then would our adventurer rank this herb among poisons, and note it as one of those, which nature forbade him to use. Yet man, by perverting his nature, has learnt to love it! and when perverted nature excites a desire, that appetite or desire is inordinate or ungovernable; for the re-action or physical resistance to evil will, like that of the moral, lessen in proportion to the repetition of the attacks; and then those guards of health, already mentioned, desert nature, and go over to the side of her enemy; and thus we see how intemperate drinking and immoderate smoking began their destructive career.

" The first effect of tobacco on those, who have surmounted the natural abhorrence of it; and who have not only learnt to endure it, but even to love it; and who have already commenced the nasty custom of chewing or smoking, is either a waste or vitiation of the *saliva*.

" The *saliva*, or spittle, is secreted by a complex glandular apparatus, from the most refined arterial blood, and constantly distils into the mouth, in health ; and from the mouth into the stomach, at the rate of 12 ounces a day*. It very much resembles the gastric juice in the stomach ; and its importance in digestion may be imagined, after listening to the words of the great Boerhaave. ' Whenever the saliva is lavishly spit away, we remove one of the strongest causes of hunger and digestion. The chyle, prepared without this fluid, is depraved, and the blood is vitiated for want of it. I once tried,' says this great philosopher, and consummate physician, ' an experiment on myself, by spitting out all my saliva ; the consequence was, that I lost my appetite†. Hence we see the pernicious effects of chewing and smoking tobacco. I am of opinion, that *smoking tobacco* is very pernicious to *lean and hypochondriacal persons*, by destroying their appetite, and weakening digestion. When this celebrated plant was first brought into use in Europe, it was cried up for a certain antidote to hunger ; but it was soon observed, that the number of *hypochondriacal and CONSUMPTIVE PEOPLE* were greatly increased by its use‡.' The celebrated Cullen says, a constant chewing of tobacco destroys the appetite, by depriving the constitution of too much saliva||.

* " Boerhave's Academ. Lectures.

† " Females who spin flax, and the manufacturers of straw-bonnets, suffer from the same cause.

‡ " Boerhave's Academ. Lectures.

|| " Cullen's Materia Medica.

" One of the kings of Spain was afflicted with a very offensive breath; to remedy which, the physicians advised his majesty to chew a composition of gum mastic, amber-grease, and other perfumes; the use of which occasioned a great expenditure of saliva. The courtiers, either out of compliment to their sovereign, or, what is more probable, from the vanity of imitating their superiors, went very generally into the same custom. The consequence was, that they who followed the fashion with most ardour, lost their appetites, and became emaciated, and *consumptions* increased so fast among them, that the practice was forbidden by royal edict.

" Some do not eject the saliva; but prefer swallowing the nasty mixture; which seldom fails to induce faintness, palpitations of the heart, trembling of the limbs, and, sooner or later, some serious chronical inconvenience.

" After what has been said, who can doubt of the bad effects of constant application of powdered tobacco to the delicate membrane of the nose; especially if they know, what a thin partition divides the olfactory cavity from the brain*.

" I have been a Professor in this University twenty-three years, and can say, as a physician, that I never

* " Too constant use of strong *snuff*; brought on a disorder of the head, which was thought to have shortened the life of a celebrated divine, and accomplished gentleman: '*cujus etiam a lingua melle dulcior fluebat oratio.*'

observed so many pallid faces, and so many marks of declining health ; nor ever knew so many hectic habits, and consumptive affections, as of late years ; and I trace this alarming inroad on your young constitutions, principally to the pernicious custom of *smoking Cigars.*

" It is allowed by all, that since the foundation of this college, the custom of smoking never was so general ; it is conceded by all, that individuals never pushed the fashion to such excess ; and it is confessed by all, that the inhabitants of this place never appeared so pallid, languid, and unhealthy. I will not say, with some, that symptoms of languor have been discernible in your public performances ; nor am I disposed to attribute it wholly to the causes mentioned in this lecture. I believe, some of you study more than is consistent with health ; and exercise less than is necessary for persons of your age. I feel a particular solicitude for such worthy characters as become sickly by indiscreet diligence ; and I entreat them to consider, that the habit of smoking increases *muscular* indolence. Nor is this all. Smoking creates an unnatural thirst, and leads to the use of spirituous liquors. I will not vouch for the truth of the common observation, that great smokers are generally tipplers. They appear to be, however, different strands of the same rope.

" Do you not, Gentlemen, see clearly, that this nasty, idle custom includes the insidious effects of indolence ; the deliterious effects of a powerful narcotic

fumigation ; and the pernicious effects, consequent to the use of ardent and vinous spirits ; destructive agents to men, but which act with redoubled force on the more susceptible frames of youth ? I appeal to experience. I ask whether he who indulges himself in this way, does not awake in the morning hot, restless, and dissatisfied with himself ? The sound of the bell grates his nerves. Even the

“ Prime cheerer, light,
“ Of all material beings first and best*,”

is an unwelcome intruder. He dresses with languor and fretfulness ; his mouth is clammy and bitter ; his head aches, and his stomach is uneasy, till composed by a little warm tea or coffee. After stretching and yawning, he tries to numb his irksome feelings by a *cigarr* and a glass of wine, or a little diluted brandy. These disagreeable sensations will, however, come and go through the course of the day, in spite of all his soporifics. By evening, a handful of *cigarrs*, a few glasses of wine, &c., remove, by their stronger stimulus, these troublesome sensations ; when he tumbles into bed, and rises next morning with similar feelings, and pursues the same course to get rid of them. Does this look like a faithful extract from the diary of “ *a Blood?* ”

“ I am entirely convinced, that smoking and chewing injures, ultimately, the hearing, smell, taste, and

* “ Thomson.

teeth. ‘*Good teeth,*’ says Hippocrates, ‘*conduce to long life;*’ because he who does not masticate his food properly, and mix it thoroughly with a due portion of saliva, will find his digestion fail; and this failure will gradually open the avenues to death.

“ The practice of smoking is productive of indolence, and tends to confirm the lazy in their laziness. Instead of exercising in the open air, as formerly, you sit down before large fires, and smoke tobacco. This hot fumigation opens the pores of the head, throat, neck, and chest; and you pass out in a reeking sweat, into a damp, cold atmosphere; the patent pores are suddenly closed; hence arise disorders of the head, throat, and lungs. These causes, co-operating with those already mentioned, produce those hectic symptoms, and consumptive complaints, that have been multiplying among you, to an alarming degree; for this nasty custom includes the destructive effects of indolence, and the pernicious effects of the too frequent use of vinous and ardent spirits; agents destructive to full grown men; but which act with redoubled force on the more susceptible frames of young Gentlemen, in the spring of life.

“ Some have said, and the observation carries with it a handsome compliment, “ that smoking cannot be an evil custom, seeing most of the clergy follow it.” I am mortified that such authority can be adduced to oppose our advice. I will, nevertheless, venture to warn you, who expect to be clothed with the sacred function, against this inconvenient practice, until you

are at least fifty years of age. As a sedentary man advances in life, he perspires less, while his lungs labour more. There is an accumulation of viscid phlegm among the inert and almost insensible solids of the lungs, in elderly people, which, in our cold months, especially in February and March, produces a kind of *chronic catarrh*, or humoral asthma; for which smoking is beneficial. Here tobacco is a safe and efficacious pectoral. There is, however, a doleful difference between the case of a man of sixty-five taking three or four pipes of tobacco in twenty-four hours, and a boy of seventeen, who uses ten or a dozen cigarrs in that time. In one, the cold and inert fibre is warmed and animated to throw off an offensive load; in the other, it is adding fuel to fire; and irritating glands already sufficiently stimulated by his youthful nature.

“ The gentlemen of the clergy drink sparingly even of wine, but many, who indulge in smoking, drink enormous quantities of hot tea, which Boerhaave observes to be one of the pernicious consequences of smoking tobacco; as it assists to bring on hypochondriac, and other dismal disorders. By forbearing to do what may innocently be done, we may add hourly new vigour to resolution. I can hardly believe there ever was a rigidly virtuous man, who became a slave to tobacco. To set the mind above the appetite, says the British moralist, is the end of abstinence; and abstinence is the groundwork of virtue. For want of denying early and inflexibly, we may be en-

ticed into the recesses of indulgence, and sloth and despondency may close the passage to our return.

* * * * *

" Of the *seemliness* or *decency* of the practice of smoking and chewing tobacco, more may be said than you will have patience to hear. Boerhaave observes, that " it is allowed, by the universal consent of the more civilized nations, that spitting in company is both unmannerly and nasty ; insomuch, that among the inhabitants of the East, it was held in the highest detestation and abhorrence ! " A physician should never use tobacco, *in any form*, as some weak patients will faint at the smell.

" The fashion of smoking tobacco was introduced into England by Sir Walter Raleigh, in the reign of James I. The custom was followed by almost all the nobility and high officers of the realm, to the great dissatisfaction of the fastidious monarch. So universally prevalent was this fashion, that his majesty could not readily find any one to write or preach against it. He therefore wrote a tract himself, which he entitled, "*A Counter-blast to Tobacco*," a copy of which may be seen in the library of this University. After exposing, in strong language, the unhealthiness and offensiveness of this practice, he closes with this royal COUNTER-BLAST : " *It is a custom, loathsome to the EYE, hateful to the NOSE, harmful to the BRAIN, dangerous to the LUNGS; and in the black, stinking fume thereof, nearest resembling the horrible stygian smoke of the pit, that is bottomless !*"

II. *Modern Geography. A Description of the Empires, Kingdoms, States, and Colonies; with the Oceans, Seas, and Isles; in all Parts of the World: including the most Recent Discoveries, and Political Alterations. Digested on a New Plan.* By John Pinkerton. The Astronomical Introduction by the Rev. S. Vince, A. M., F. R. S., and Plumian Professor of Astronomy and Experimental Philosophy, in the University of Cambridge. The Article America Corrected, and considerably Enlarged, by Dr. Barton, of Philadelphia. With numerous Maps, drawn under the direction, and with the latest Improvements, of Arrowsmith, and engraved by the first American Artists. To the whole are added, a Catalogue of the best Maps, and Books of Travels and Voyages, in all Languages; and an ample Index. In two volumes. Conrad and Co.: 1804.

MR. PINKERTON had long been very advantageously known to the public, as a man of extensive and recondite learning. His *Dissertation on the Origin and Progress of the Scythians, or Goths, being an Introduction to the Ancient and Modern History of Europe*, was first published in 1787, and procured for its author no inconsiderable celebrity. The work, indeed, is sometimes marked with a systematic spirit of prejudice, from which even the *Modern Geography* is not wholly exempted. But these are small faults, compared to the great aggregate of merit.

The *Modern Geography* is a work of classical merit. It is, we believe, the best work of the kind that has, hitherto, appeared, in the English language. We cannot, therefore, but regret, that the limits of this *Journal* do not admit of our laying before the reader, something like an analysis of it. We are obliged to confine ourselves to a very few observations, relative to the American edition.

This edition is printed in a much more convenient form than the London edition (which is in two volumes, quarto), and is furnished at a much more moderate price. It is, also, enriched with a number of maps, of which the original edition is destitute. That part of the work, which relates to the new world, is somewhat enlarged, and is, in many respects, very materially altered. Whether it is materially improved or amended, it belongs not to the Editor of this Journal to assert. He can, however, very sincerely say, that he has laboured to remove some of the errors of the original work, though he is not certain, that he has always succeeded in his endeavours. In particular, it is not improbable, that Mr. Pinkerton may suppose, that his own theory, relative to the origin of the numerous tribes and nations who have spread themselves through the two Americas, is much better founded, than the theory which the Editor of this Journal has thought proper to adopt. This is a question of great curiosity, which we would not be unwilling to discuss at greater length, in an *amicable* manner, with the ingenious author of the Geography.

We beg leave, in this place, to introduce the following Note, relative to the article America, as it appears in the Philadelphia edition.

“ NOTE, CONCERNING THE ARTICLE AMERICA.

“ The article America, in Mr. Pinkerton’s excellent system of *Modern Geography*, having been found, in many respects, extremely defective and erroneous, it was deemed proper by the Editors of the Philadelphia edition, to endeavour to render that article more worthy of the public notice. I was induced to undertake the task, not sufficiently aware, at the time, of the difficulties with which it was attended.

“ In accomplishing this task, I have had different objects in view; to correct some of the errors into which the learned author has fallen; to supply some of his *desiderata*; and sometimes to temper the severity of his strictures.

“ I hope it will be found, that not a few of the errors in the original article have been corrected. In many instances, these errors relate to subjects of great moment in the view of America, and especially of the United-States, and other parts of North-America: in others, they are of minor consequence.

“ Not a few of the desiderata have been supplied, and some of them, I flatter myself, have been supplied in a very able manner: those I mean which have been communicated to me, viz. the articles,

LAW, MANUFACTURES, and COMMERCE. For these articles I am indebted to the kindness of two gentlemen, whose talents, and intimate acquaintance with the subjects which they treat, will readily be acknowledged. The article Law was drawn up by Alexander J. Dallas, Esq., those relative to manufactures and commerce by Tench Coxe, Esq.

" For all the other additions, alterations, and corrections, I am myself responsible. Many of these additions, &c., have been introduced into the body of the page, whilst others are thrown into the form of notes. These last are marked with the initial of my name.

" It may, perhaps, seem decorous to apologize to Mr. Pinkerton, for the liberty which I have, in many instances, taken with his statements of facts, and with his speculative opinions upon a variety of subjects: my apology is briefly this; it was intended to render the work more correct and just; the task was confided in me; and, as an American, I had it more in my power than the learned author could have had, to procure authentic documents, or a more extensive body of facts. It was originally my intention to have introduced, in the shape of notes, *all* the points of difference between Mr. Pinkerton and myself, but I found it necessary to relinquish this design, as the work would have been too much swelled with an expensive body of notes.

" To the public it certainly becomes me to apologize for the errors into which I myself may have fallen, or for those in the original work which I have left uncorrected. The subjects on which I have treated are extremely numerous, and the difficulties attending their right discussion by no means few. Every Editor of such a work will fall into errors; all that, perhaps, can be expected is, that the new work will be more perfect than the original. I have not, intentionally, wounded the feelings of any portion of my countrymen, but I have been obliged to glance at some of the peculiarities of their character. This I have done with much less severity than Mr. Pinkerton has done.

" BENJAMIN SMITH BARTON.

" *Philadelphia, April 7th, 1804.*"

END OF VOLUME I.



3 vols. bd.

